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FERRANTI

PO online services stopped

ONLINE services within the Post Office Data Processing Service were halted at the beginning of the week as members of the SCPS increased pressure on the Post Office to meet their demands for pay parity with white-collar engineers who, it is claimed, earn up to £1,000 more than comparable computer staff grades. (CW, January 18).

This action, which centred on computer centres in London and Leeds, followed a one-day stoppage in which administrative offices in London and Cardiff were picketed, and a two-day withdrawal of staff from the Post Office's scientific timesharing centre in Harmondsworth.

"The 24-hour stoppage was supported by about 200 senior operators and some software support staff," said an SCPS spokesman. "Burroughs and Leo 328 equipment were also hit."

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COMPUTER WEEKLY

US gives mixed reception to viewdata system

US reactions to the Post Office Prestel viewdata system, presented at seminars in New York and Washington last week, ranged from acclamation to scepticism.

Ed Zimmerman of President Carter's executive office staff, told Computer Weekly that he was "very excited" by the technology and by the seminar, which was held in the Oval Office of the White House.

"We are very grateful to Butler Cpx, Inscac and the Post Office for arranging the seminar. Our plans for automating the President's office and for making government information more accessible to the public are still conceptual and it is too early to say whether we shall use anything like viewdata," he said.

High spot of the demonstration was the transmission of CAP demonstration software from London, which generated moving graphics.

Some 200 delegates attended, half from the administration and half from industry, including representatives from Rockwell, GTE, Philips and the rival French Antelope system.

Garry Rosch from the Federal Communications Commission advised caution on viewdata standards, saying they should not be set until there was confidence that they would be valid for at least five years.

Delegates at the New York stock analysts' presentation were sceptical about the US prospects for viewdata, although they thought limited business use was promising. Their views were echoed at a

Quantum Science Maptex seminar in London last week, at which Mirek Stevenson, Quantum Sciences chairman, expressed major doubts.

"The system is not competitive with wideband cable television systems," he said. "It will do reasonably well in Europe in the business environment, but not in homes, where it is too expensive for entertainment and too limited for education."

Union in talks on Prestel maintenance

THE Post Office Engineering Union is negotiating with the Post Office to ensure its members maintain business Prestel terminals, including the VDU part, particularly where they are directly connected to the telephone network.

The Post Office is planning to offer business viewdata terminals on the open market in competition with private suppliers and the union would expect maintenance of the Post Office sets to be done

automatically by its members. For privately supplied terminals it wants the Post Office to offer maintenance services in competition with other maintenance organisations. It would not expect its members to be involved with maintenance of adapted domestic TVs.

A spokesman for the Post Office said, "We'll no doubt study it along with other proposals from our unions."

Alexander Korda, marketing



ZIMMERMAN... "very excited" by the technology.

NEWS IN BRIEF

The sound of music...

A MUSIC synthesiser, claiming to be the first with true polyphonic sound and a microprocessor-driven sequencer, has been launched by Electronic Music Studios of Great Britain, Oxford. Called the Polysynth, the machine has a 48K Zilog Z80 as a sequencer, piano keyboard and a wide range of controls for varying the wave forms of the sounds produced. It is "polyphonic" in that any number of notes can be played at once.

EMS is involved with Oxford University in its music research (CW, October 28, 1978).

PURCHASE by the National Enterprise Board of between 20 and 25 per cent of Logica's shares (CW, July 13, 1978) is to be formalised today (Thursday). At the same time, details of the NEB's office systems consortium (CW, October 12, 1978) which will have Logica as its principal partner, are to be announced.

BUREAU group, CMG, spent £35,000 carrying out study to assess the future of bureau market, and has concluded that prospects are good, forecasting a £15 billion market in the 1980s. Managing director Nick Schofield described himself as "very irritated" at talk that bureaux will be put out of business by minis and micros.

Amdahl order

WITH an order from Philips for an eight Megabyte 470V/7 mainframe, Amdahl has scored a significant victory in the contest to replace the obsolete Philips P1000 mainframes which are still widely used within the company.

The V/7, for installation in April, will be used for time-sharing and batch applications and will take over work currently running on P1400 mainframes. It will be installed alongside IBM machines in Eindhoven.

Plessey men out

THE two Plessey representatives on the ICL board, Sir John Clark and T. Parry Rodgers were automatically retired by Plessey's decision to sell its 24.42% stake in ICL.

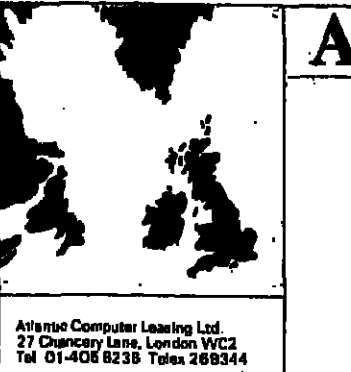
Callaghan on micros

From front page

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Briefing

First Japanese mainframe in UK

FIRST all-Japanese built mainframe system to be installed in the UK is now in operation at the Co-operative Insurance Society in Manchester. The machine is an IBM compatible AS/6 built by Hitachi and sold worldwide by IteI as part of its Advanced System series.

Announced by IteI late in 1977, the AS/6 is more powerful than the IBM 3032 and is a Hitachi M180 modified to meet IteI's specifications. The link between IteI and Hitachi was first foreshadowed in Computer Weekly nearly three years ago (CW, April 1, 1978).

CHANCES of Clement Freud's Freedom of Information Bill (CW, January 25) becoming law have improved following the naming of the MPs who will consider the Bill in committee. Apart from two Labour and two Conservative official spokesmen, the members are all supporters of the Bill. Thus there is a possibility that they could get the committee stage over very quickly and return the Bill to the House for enactment before the General Election.

ICL has lost the maintenance contract for the ICL System 4/72 at Exeter University to Data Processing Customer. Engineering, the firm that has been aiming to take over an ICL site for some time (CW, November 24, 1977). DPC has developed its own diagnostics for System 4 and will provide spare parts from its own sources.

FOLLOWING the Data Protection Committee's study of computer privacy issues, the government is now starting its own compilation of the views of interested parties (see conference Computerweek, page 2). The trade associations and pressure groups will be consulted, but anyone else is welcome to send a submission to: The Under-Secretary of State, E4 Div, Home Office, 50 Queen Anne's Gate, London SW1H 9 AT.

SYSTEME says it is evaluating the feasibility of marketing its Digital Equipment PDP-11 based systems in South Africa. System directors visited South Africa last year and are currently considering appointing an agent or setting up a dedicated sales force. There are no plans to manufacture in South Africa at this stage.

CONTINUING its diversification, oil giant Exxon has introduced a line of low-cost gallium arsenide lasers as a first step into the semiconductor field. The lasers, aimed at the fibre-optics and information technology markets, will be sold by the company's Optical Information Systems subsidiary.

COMPUTER Board's Network Unit is being disbanded and replaced by a six-man Joint Network Team which will run in co-operation with the Research Councils.

Civil servants' plan could paralyse key government centres

FURTHER problems for the government look likely as a result of plans by Civil Service unions to take action at key government computer centres to back their claim for substantial pay rises. The action would be aimed at hitting the government revenue gathering and administrative procedures.

The plans are being considered by a number of unions including the Civil Service Unions Association, and the SCPS, whose deputy general secretary Campbell Christie outlined potential action last year (CW, November 16, 1978). They intend to test the Civil Service Department's reluctance to go against

the 5% pay guideline. The unions are guarded about which targets they will disrupt, and no definite centres have yet been chosen. But the potential list could include the Customs and Excise computer centre in Southend, the Swansea Vehicle Licensing centre, and various Ministry of Defence installations.

The overall view is that we should not affect people in need such as those receiving supplementary benefits or the unemployed, said a CISA spokesman. "And in the MoD, we would not do anything that would put the country's defence at risk."

IBM announces the E-series as the 4300

ANNOUNCING the first two models of the much-delayed E-series as the 4331 and 4341, IBM has confirmed that the key operating systems for the line are VM/370 and DOS/VSE. The announcement, however, omits any details of planned database software for the line.

As consistently forecast in Computer Weekly, the line, announced on Tuesday, features dramatic improvements in price-performance, with the 4331 processor starting at £48,470, or £1,453 a month, with 512K bytes of memory, and the 4341 at £158,875, or £4,737 a month. No software pricing has been given.

The three supported operating systems on the line are VM/370, a new version of DOS/VSE called DOS/VSE, and OS/VS1. MVS is, however, not mentioned.

For the first time, new licensed software packages, called System Installation Productivity Option/Extended, IPO/E, have been introduced. These include either VM/370 or DOS/VSE with several additional programs configured to suit a particular operating environment.

Ease of use is a key feature of the 4300 series with installation aids for systems programmers, screen prompts for application programmers, and interactive guidance, advanced programming languages, and business planning packages for end users.

The 4331 is likely to impact IBM's own 8100 series of communications processors and

announced in October, since it includes an integrated communications adaptor which allows it to operate either as a host or a node in an SNA net.

Turn to page 2

D for desk-top

AFTER the E-series, the D-series, US sources say that IBM is preparing a powerful new line of desk-top computers which will be considerably more than a simple boost for the 5110 desk-top machine and will offer tough competition for Hewlett-Packard's low-end machines and for offerings of equivalent from companies like Datapoint and DEC.

Spring debut

THE long-awaited ICL network architecture is expected to be introduced in April or May, possibly in time for the Hannover Fair. In 1979, ICL plans to plug the remaining gaps in the 2900 product line, so that by September both hardware and software should present users with a clear and comprehensive growth path.

Translator

A HAND-HELD electronic translator has been introduced by Lexicon, an electronics firm based in Miami. Costing \$225, it translates single English words to and from French, Spanish, or German. Words are entered on an alphabetic keyboard and read out on a single-line display.

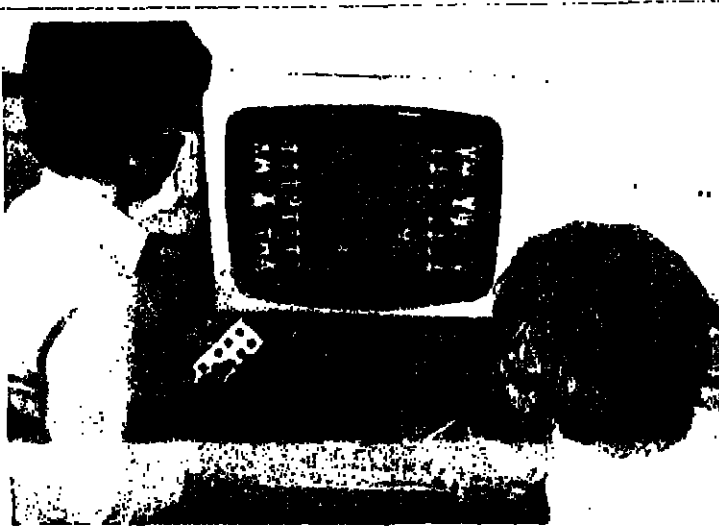
GMG tops pay league

COMPUTER firms account for 15 of the 20 highest paying "electronic companies" (which include computer bureaux) in the UK according to a salaries "top twenty" included in a new financial survey.

CMG is the highest payer with an average of £7,818 for the year ended April 1978.

Average salary figures quoted include £6,474 for IBM employees in 1977 and £5,880 for ICL employees in the year ended September 1978. Honeywell paid its staff an average of £4,800 in 1977, while Digital Equipment staff averaged £4,807 in the year ended August 1977.

Several major computer firms like Burroughs, NCR and Control Data are not in the top 20. The 500 companies listed all have a turnover of more than £2 million, and for each one the



Latest TV game a mix of chess and Star Trek

COMBINING the sedate tradition of chess with the modern Zap of Star Trek, Videomaster has brought out a new TV game, Star Chess (pictured above), which incorporates a Motorola 6800 and three purpose-built chips. It costs £59.95.

Castling is not allowed in Star Chess, but pieces can "warp" off to appear anywhere on the board at random. In addition to chess-like piece taking, the pieces can "shoot" each other. The King and Queen have seven protective shields each, while other pieces have four shields each, except for the pawns, which have two each.

There are six levels of play up to Grand Master level. Star Chess was on display last week at the TV Mex exhibition in Birmingham.

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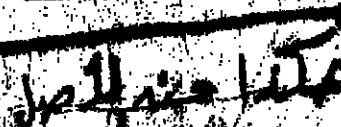


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DP sports

COMPUTASTARS, the DP sports event of the year, is to be held later this year, culminating in a final at Crystal Palace on September 28 (CW, January 18). Full details will be published in Computer Weekly as soon as the current paper shortage is over.



Public doubts about privacy

EXACTLY how computer systems will be regulated if the UK ever gets privacy laws, was not much clearer at the end of last week's conference on Computers, Records, and the Right to Privacy, but it provided the Data Protection Committee with its first opportunity to defend its proposals in public, which it did with gusto and not a little controversy.

The main news to come from the meeting was that the government is this week initiating a series of meetings with interested parties to gather their views on what form legislation should take. This was announced by Home Office Minister Lord Boston of Faversham, deputising for Merlyn Rees who was kept away by sundry crises. Some delegates commented that the government was simply starting all over again with the exercise that the committee had just completed. In any case, the impending election casts the principal doubts over the chances for legislation soon.



David Steel is at stake in the distribution of power and the psychological integrity of the people.

Lord Boston, giving the government's reaction to the DPC's report, said it appeared that concern over computers and privacy was "amply justified", although he pointed out that the committee had found no significant evidence of any abuse. His principal concern was that the proposed data protection authority would have "unusual independence", and would need to have its accountability secured in some way.

It would be a very powerful new Quango, and, as he put it, "The government will need to be sure there are adequate safeguards against such a body transforming itself into a self-regulating, self-expanding empire."

Liberal leader David Steel opened the conference with an impassioned speech in which he said the DPC's proposals did not go far enough — he called for a statutory right of access for individuals to any personal information about them, backed up by a Bill of Rights to prevent Parliament exceeding its authority.

"What is at stake," he said, "is the distribution of power on one hand and the psychological integrity of the people on the other." He also wanted manual records as well as computer files to be controlled.

Committee member Charles Read, of the Inter-Bank Research Organisation, accused Steel of not having read the report. In some applications, he said, it would be ridiculous to give people a right of access;

they could just make a nuisance of themselves by demanding to see everything that could refer to them.

Read vigorously defended the committee's proposal of a "flexible approach", even though it leaves so many practical questions unanswered.

Privacy needs vary a great deal, he said, adding that they vary even more between countries. "If you were a Swede and saw how little privacy you had left," he said, "you'd be interested in protecting it."

A series of simultaneous workshops was held, on the details of the report itself, on costs, and on police, medical and employment records. At the report workshop, law lecturer Joe Jacob claimed that the DPA would not be nearly independent enough of the government, since every code of practice would have to be approved by Parliament and the Home Secretary could put the whips on to make sure his wishes were met.

"The report gives all the power to the Home Secretary that he could want," Jacob said. A long list of questions about how the data protection rules could be enforced in practice was presented, but very few of them got answered. They concerned how it could be defined what systems would be affected by the law, how the "purpose" of an application could be defined, and how determined evaders of the law could be caught.

In particular, the impracticability of "inspecting" a computer system was raised, to which the committee chairman, Sir Norman Lindop replied, "You can't legislate against the bent operator" — leaving open the question of what is the point of the law at all.

Rabbe Wrede, from the Swedish Data Inspection Board, was asked by Professor Paul Samet whether the law there had made any difference — whether people were any better off. Wrede replied that he thought so, but gave no evidence to support this.

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Lawsuit over DEC Massbus

MANBUS, used in bigger Digital Equipment computers, is the subject of a lawsuit in the US between DEC and Microcomputer Systems Corp of San Francisco, which has developed disc systems that are plug-compatible with the Massbus controller.

MSC has filed a federal suit to invalidate five of DEC's patents relating to the Massbus, anticipating that DEC may sue MSC for patent infringement now that it has launched the disc systems. The MSC suit maintains that in March 1977 DEC told MSC that the patents were not available for licence but that MSC believed that its systems would not infringe any of the claims of DEC's patents.

THEORY and practice with VSAM and DOS/VS will be the subject of the next meeting of the IBM users' group Common Europe. It will be held in Hannover, West Germany, on February 15 and 16. Last month, members of Common's Series 1 project and others interested in the machine held a highly successful meeting in London on Series 1 communications.

FOLLOWING the Butler Cox seminar on viewpoint presented in the Oval Office two weeks ago (CW, January 25), the White House will almost certainly install a viewpoint terminal to access and experiment with the Post Office Hosted system, says Sir John Barran, head of the Central Office of Information viewpoint unit.

BANKS in the US could have to spend nearly \$1 billion in sending out notifications of privacy rights to all their account holders, as required by last year's Financial Institutions Regulatory and Interest Rate Control Act. This estimate came out of a study by Federal Reserve Bank of New York, which concluded that 967,000,000 accounts were affected, and the cost to banks, savings institutions, and the like would be \$922 million.

FIRST of several new product announcements expected this year from Computer Associates in the US, a software package giving DOS/VS users a considerable degree of file independence, has been released. Called CA-Dynat/FI, the software allows physical attributes such as block size to be redefined at run-time. The US price is \$2,500.

PRESENT and potential impact of microelectronics and the microprocessor is to be covered in a survey undertaken by the Institute of Data Processing Management. Details of the survey are expected to be announced at this week's Microsystems 79 exhibition and conference.

Burroughs' reply to System 38

FIRST mainframe to respond to IBM's System 38 small business database machine (CW, October 26, 1978) is Burroughs, with a dual-processor version and two repackaged models of the basic B1800 processor.

The three machines have been reprinted to compete with System 38 and effectively supplant the existing six B1800 models. Head to head with System 38, Burroughs cites full Cobol, relational as well as hierarchical facilities within the DMS II

A "SOFT" microprocessor, optimised for the execution of Pascal, is reported to have been developed by Western Digital Corp. of Newport Beach, California. Called the Pascal Microengine, it includes a microcoded interpreter for the Pascal intermediate language, P-code.

In effect an implementation of the national P-code, the processor avoids the overhead of interpreting P-code in software and thus saves both memory and execution time.

Western Digital is offering the Pascal Microengine in two forms: either as a 16-bit chip set, or as a packaged Pascal system.

The chip set is made up of four elements: an arithmetic chip, a microsequencer that handles I/O control and some instruction decoding; and two ROM chips containing microinstructions. It is sold singly for \$195 but reduces with quantity discounts to a price of \$97.50.

The packaged system includes an Ascii console and a full range of operating software including Pascal and Basic compilers, a file manager, editor, debugger, and graphics package. It is priced at \$2,595.

Union slams Think Tank micros report

THE white collar union Apex has attacked the government's Central Policy Review Staff "Think Tank" report on the social and employment implications of microelectronics (CW, December 14, 1978).

Apex, which is carrying out its own study in this area, due to be published in March, accuses the Think Tank of relying on "flimsy" evidence to back its assertion that there is no evidence of office jobs lost through automation.

David Cockcroft, head of research at Apex, said that his union's study could come up with many examples where jobs had been lost through office automation to counteract the more optimistic case studies produced by the CPRS report.

Bradford City Council, where the number of typists in the typing pool has been cut by about 50 per cent since the introduction of word processing equipment, is one example frequently cited by Apex.

However, Apex stresses that its attitude is that micros could provide an opportunity to improve productivity and enhance working lives, even though it is aware of the potential dangers which could "in some cases be a direct result of a society between a highly trained elite and a mass of unemployed unskilled people."

Apex feels the report falls seriously wide of the mark in addressing the complex problems involved.

\$207m bid by Xerox

IN A FURTHER effort to diversify its business, colour giant Xerox is bidding \$207 million for International communications specialist WUI Inc.

WUI is the parent company of Western Union International, which provides international cable and telex services from the US in competition with ITT and RCA. It was spun off from Western Union Corp in 1943, and no longer has any connection with it.

The B1885 is a significant innovation, being the first dual-processor machine from a major manufacturer in its class.

Performance is claimed to be up to 50% better than the biggest B1800s currently installed, and a basic system costs about £95,000 plus £280 a month for the system software.

Performance is claimed to be up to 50% better than the biggest B1800s currently installed, and a basic system costs about £95,000 plus £280 a month for the system software.

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ICL's South African ties



THE generally anti "permissive" laws in South Africa have led to local jokes about how the strip clubs of Johannesburg are kept going by visiting white South African tourists trying to see what they are missing.

So it comes as something of a surprise that ICL South Africa was bold enough to use this revealing publicity photo to spread the word about ICL South Africa's new tie (the one that seems to be growing out of the flowers like some Dame Edna Everage concoction).

The tie is in orange, argentine (sic) grey and ivory stripes with the ICL logo in grey on an ivory stripe. Computer Weekly renders, however, will have to be content with this page 3 picture in black and white.

Colorado for Inmos US base

THE US base for Inmos is to be in Colorado, as predicted (CW, November 2, 1978). The announcement was made last week that the US headquarters and technology centre would be in Colorado Springs.

The company hopes to launch its first product early next year. Speculation is that this will be

a 64K RAM, and the chances are that it will be a second source device (CW, October 5, 1978) although some sources indicate that it might be an Inmos designed pin-compatible memory. Which ever route the company follows, the memory is likely to have a function on pin 1 of the chip (CW, January 11).

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4. Programming techniques: addressing modes, mutual exclusion, interrupt driven encryption, memory design and segmentation, distributed processing.
5. ISBC-86: computer with 8086 plus 48K bytes of memory, I/O, etc. on a single board; description, peripheral interface, applications.

The introductory 8086 seminars were completely oversubscribed. This is the first applications seminar to be held on the 8086 and it is essential to book early to ensure a place, since space is strictly limited.

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Confusing education and training

MR BRIDGER in his letter of January 4 makes a strong case for the provision of microcomputer systems in further education colleges.

While his case is valid, he unfortunately suggests that such provision should be at the expense of schools since the "high-fliers of 18+ readily absorb computer concepts at universities and polytechnics without previous school computer studies".

I fear that Mr Bridger is confusing education and training. Schools require to provide basic skills training (literacy, numeracy...) and a broad basis of education, relevant to contemporary society. This is why the provision of an adequate computing resource is essential. No one can deny the relevance of the computer to contemporary society and it is vital that

today's children should be aware of the potential, the limitations and the implications of using computers. This can only be achieved effectively if those pupils have some access to computers. The microcomputer, despite its limitations, is probably the cheapest way to achieve this. Microcomputers, too, have a potential as a teaching resource—certainly in mathematical modelling and science simulation—and probably in basic skills training.

Computer studies in schools is perhaps a red herring, for although taught in well over a third of secondary schools in the country, these courses at present apply only to a relatively small number of pupils.

JOHN TURNBULL
The National Computing Centre
Manchester M1 7ED.

A laudable first

I'M sorry I can't share Professor Michie's interest in maze-solving mice, but I would like to correct an error in his article (Privateview, January 11). The Univac machine in 1953 was certainly not the first commercially available large-scale computer.

The Mark I machine sold to big firms and government departments and all, I think, delivered by the time I left Ferranti early in 1954. So I think we can claim a very laudable first here.

DAVID WILDE
Senior Lecturer
Bristol University

I am glad to accept Dr Wilde's correction concerning the Ferranti Mark I, which I had not realised was commercially available before 1953. I was certainly aware of the Ferranti machine in the academic context. Alan Turing used it in an (uncompleted) attempt to program an experiment on which he and I were then engaged in computer chess. — Donald Michie.

installed in London by games importer

NEWS ROUND-UP

PRIVILEGED few who can play with the Post Office's Prestel test service became many more in the last week as arcade game importer Cherry Leisure installed the first five of its coin-operated videodata terminals in London.

Other coin terminals are being installed at the British Tourist Authority offices in St James's Street, Debenhams' store in Oxford Street, the all-night post office in Trafalgar Square, and at Heathrow Airport.

The Cherry terminal is based on a control card designed in the UK by Charlie Hall and John Brown using a Rockwell 6502 microprocessor.

FURTHERING its moves into the US marketplace, GEC has agreed to buy Bontoon Electronics Corp. of Parsippany, New Jersey, in a stock deal valued at \$9.5 million. Shareholders in Bontoon, which manufactures RF power instruments and measuring equipment, will receive \$15 for each share from a newly formed GEC subsidiary.

BASIC has joined Fortran and PL/M as high-level languages supported by Intel on its microprocessors. Basic-80 runs on Intel 8080 or MDS-800 development systems with at least 48K of RAM. The firm has also introduced a version of PL/M for the 16-bit 8086, and an enhanced Fortran 77 compiler for use on the IBM-370 mathematical processor.

MICRO-BASED general business system, in desk-top form, has been introduced by Kalamazoo, the Birmingham-based service bureau and office systems company. Designed to handle order entry, payroll and

similar accounting applications, the K2000 from Kalamazoo is based on the Intel 8080 micro and a basic system costs £8,950 with an additional £2,300 a year service charge for a user with the complete range of system facilities available.

CONTROL DATA sees a worldwide potential market of 200 systems for supercomputers like the Cyber 203 that it announced last week (CW, January 18). In the UK the Meteorological Office could be the first 203 user. A spokesman for the Met Office said that it needed a supercomputer like the 203 for long-term weather forecasting covering months, seasons and even years, and involving complex climate simulation.

AMDAHL had net profit up 82% at \$48.2 million on turnover up 70% at \$320.9 million in the year to December 29, 1978 and there is no sign yet of Amdahl Corp's meteoric growth beginning to flag. Amdahl president John Lewis attributes the improvement in pre-tax profit margins from 28.6% to 30.6% to an exceptionally high level of outright purchases during 1978.

IN a massive modernisation of its internal computer operations, GE has signed five-year rental contracts with Honeywell for 60 large-scale Level 66/DPS processors, to be configured into 21 systems in 11 computer centres across the US.

APPROVAL has been granted by the Computer Board for an extension to the University of London Computer Centre

building. This will roughly double the amount of space available for the Centre's mainframes, as well as providing more room for communications equipment. A new processor to join the existing CDC 7600 and other machines has not yet been decided, but most of the very big systems on the market are being considered.

A MICROCOMPUTER system, Microstar 45 Plus, which costs less than £5,000 is now being distributed in the UK by Microsense Computers, a new division of the computer accessory supplier Data Efficiency of Hemel Hempstead, Herts. Microstar, which is built in the US by Micro V Corp of Irvine, California, comes with a multi-user, multi-tasking disc operating system called Stardos and Basic.

Puzzler

A MATHEMATICALLY minded farmer decides to construct a rectangular pen in one of his fields, using fence-posts placed at one-foot intervals around the perimeter. In drawing up the plans, he naturally makes sure that the number of square yards enclosed will exactly equal the number of fence-posts used.

In addition, to make the pen really unique, he chooses the only two different side dimensions x and y that will make xy a perfect square. Can you work out x and y before turning to page 45 for the solution?

Dead or alive

WORD comes to me from Al Nippon Airways, one of the large family of airlines running their reservations on Univac 1100 mainframes. The Japanese domestic carrier maintains an amazing computer file called Passenger Name Record.

"PNR," it says, "is a well-controlled database which always houses more than two million passengers' names." Among the interesting details on the passengers are "telephone numbers, dates of reservations, routes and destinations, whether they take children — and whether they are deceased or not."

That settles it. Compulsive travellers are bad enough as travelling companions, but flying all the way from Sapporo to Osaka strapped in beside a corpse is an experience I would prefer to forego.

Sexy!

DONALD MICHE's predictions about micro-controlled sex toys (Downline, January 11) seem to be coming true faster than one would expect. A reader, C. Cracknell, has sent me a cutting from Computing Today that lists all the latest accessories available for a Tandy. "The expansion interface," it says, "contains space for an additional 16K, 32K RAM, and a disk controller."

Very useful, I'm sure!

SOFTWARE FILE

Scicon will launch Interact in UK

THE interactive program development system acquired late last year by Cullinane is about to be launched in the UK by the firm's UK agent, Scicon. Called Interact, the software will be released initially as a stand-alone product running under IBM's OS operating systems.

It will subsequently be available in a DOS implementation and as an integral part of the IDMS-DC teleprocessing monitor.

Interact has its origins in the Wylbur text editing system developed at Stanford University. An enhanced version of Wylbur, known as Mentext, was the principal product of Mental Inc. of Palo Alto, which Cullinane

took over last year (Software File, November 2, 1978). The system in its present form is time-shared and multi-tasking, and aims to cater both for online program development and word processing.

An unusual feature of the system is that it supports both background and foreground job submission, the latter allowing fully conversational execution.

Cullinane is currently developing a DOS version of the system and is also working on integrating it with IDMS-DC.

Both the DOS and IDMS-DC versions are expected to be available around June, with Interact Release 6.0.

PROGRAMMER NOTES

A READER'S anxieties over the future development of Fortran (Programmer Notes, January 11) have brought a swift response from one of those closely involved with the standardisation effort.

Brian Meek, director of the computer unit at Queen Elizabeth College, University of London, endorses many of the points made by A. P. Cranswick while offering reassurance that Fortran is not about to slaughter the language.

"The X333 committee is very conscious of the points he makes about the removal of language features. I must stress that the proposals for the nature of 'core' Fortran 82 are still very tentative — it could even turn out to be Fortran 77."

"But if it is to be more compact, then roughly speaking the candidates for removal fall into three categories:

- 1) Little-used features which are not worth implementing in a 'core' language since few programs need them.
- 2) Potentially dangerous features whose use — whatever their 'structuring' capabilities — should preferably be avoided except perhaps by the expert.
- 3) Features for which better alternatives exist to include in the core.

"Some features may fall into more than one of these categories, and I would say that only those which fall into both 2 and 3 would be under threat of deletion, and even that is a long way off. I would hope that such features would in time also move into category 1, and that all in 2 would eventually fall also into 3 and then 1."

"Even then — with all the bad features replaced and little used — it would still be possible in any future standard to add to the core a module containing them, the only difference being that an implementation would not have to provide it to be standard-conforming. But that is a long way off, much further than Fortran 82."

On the subject of structuring facilities, in particular the computed and the assigned GOTO, Meek notes that a "case selection" construct is being seriously considered for inclusion in Fortran 82.

"It is included, I would expect it to be in the core and the computed and assigned GOTO is outside. If it is not, I would think that the assigned GOTO would not be in the core (it is of course in category 1 despite its undoubted uses) but that the computed GOTO would be."

He also notes that two of the useful extensions mentioned by Cranswick, negative DO loops and the block IF, have already entered the language in the 1977 standard.

Finally, Meek addresses the question of programming style and the lack of literature on the effective use of Fortran facilities.

"It is of course quite right to say that a bad program can be written in any language. It is certainly also possible to write well-structured and readable programs into the old 1966 standard Fortran; it is just that it is difficult and takes a lot of effort and self-discipline (NB—I recommend Ledgard's Proverbs for Fortran Programmers, or Kernighan and Plauger's Elements of Programming Style)."

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Prompt designed to get system running quickly

A SUBSIDIARY of Theorem Computing Systems, Theorem Series 1 Ltd, has acquired UK and European rights to an end-user database package for IBM's Series 1. Called Prompt, the software runs under the EDX operating system and was developed by Mid-America Control Corp.

As its name suggests, Prompt builds application files and programs under the control of a question and answer sequence, thus allowing a user to get an application up and running very quickly.

According to Theorem Series 1, it will typically deliver a customised version of the system, with one or two applications already defined. Subsequently, users would usually add to applications, or devise new

applications, themselves, for example by building management reporting programs. As the system uses a dynamic data directory, extensions to an existing file do not make program modifications necessary.

In its present form, the software supports two basic modes of TP update: online single-user, and a semi-batch data entry

mode. In the latter, multiple screens each create their own file, with an update of the main files at the end.

The next release, however, is scheduled to replace file-level locking with record-level locking. Multiple terminals will then be able to work concurrently on the same updating application in full online mode.

Two or three terminals can be supported on a 64K configuration, according to Theorem, while a 128K Series 1 could drive five or six.

Prompt has around 50 users in the US.

Prompt is priced at £3,500, including initial training and support, with subsequent support at £500 per year.

Micronova version of Blis/Cobol

A VERSION of the interactive multi-user Blis/Cobol operating system has been released for Data General's Micronova. Full upward compatibility is claimed with the existing Nova and Eclipse versions, to the extent of not requiring program recompilation.

Blis/Cobol offers Micronova users a virtual memory operating system and features include dynamically updated index files with up to three alternative keys, spooling, screen management via Cobol, multi-user online debugging, large Cobol programs, and a full set of

utilities. Developed by Information Processing Inc. of Winter Park, Florida, Blis/Cobol is sold in the UK both by Houdis Computing, of Stafford, and by Software Implementation, of London. The Micronova version is priced in the US at around \$1,000.

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Other systems available include the C3 CFM with 32K RAM, 512K of disk storage and BASIC as standard. £295.00 + VAT (FORTRAN and COBOL available as extras.) All dealer enquiries direct to Abacus Computers Limited.

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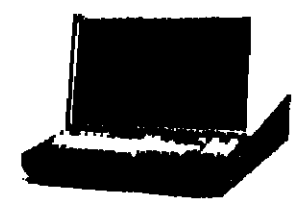
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Cable and Wireless executive appointments

PROMOTED to the position of general manager of Cable and Wireless UK Services is Richard Kemp, formerly sales manager, will operate from the Leeds office with responsibility for sales offices in Manchester, Edinburgh and Dublin. Joining the company from Business Data Products where he was sales director, Kemp will be responsible for sales in the South of England. He will be based at the London sales office, together with Winder who takes over central region. Winder was formerly sales manager and before that worked for InterScan.

Les Hazelgrove has been appointed European marketing manager for National Semiconductor Computer Products Group Europe. He joins the company from Data General where he was regional sales manager. In his new position he will be responsible for OEM sales of IBM-compatible products and European headquarters product marketing.

David Wildman has been appointed associate sales director of ICL(UK), with responsibility for the South-East. He was formerly product marketing manager for distributed data processing with IBM.

DIARY

FEBRUARY

Forran programming for Codesys! databases. P. Clarke, BCS Forran Specialist Group, Board Room, BCS, 13 Mansfield Street, London W1, 11.00

Developments in medical computing. Dr B. Barber, BCS East Anglia branch, Addenbrookes Hospital, Hills Road, Cambridge, 10.00

Medical diagnosis by computer. F. T. de Dombal, BCS Leicester branch, James West building, The Polytechnic, Leicester, 18.15

Computer operations - the poor relation? J. K. Haynes, BCS Birmingham branch, Priory Lane Hotel, Edgbaston, Birmingham, 18.30

AGM/Distributed computing. BCS Data Communications Group, Chemistry Lecture Theatre, Birkbeck College, London WC1, 19.30

Interfacing software. Study Group on Computers in Survey Analysis, City University, London, Details from John Utting, National Children's Bureau, 5 Watling Street, London EC1V 7QE

Distributed computing - discussion and AGM. BCS Data Communications Group, Chemistry Lecture Theatre, Birkbeck College, London WC1, 19.30

Word processing - practical techniques. K. Smith, BCS Kingston-on-Thames branch, Regional Management Centre, New Malden, 19.30

Of isobars and IBM. Dr S. Gill, BCS Hammerside branch, Wilberby Manor Hotel, Wilberby, 19.30

IBM CUA Telecommunications group, Centre Hotel, Portsmouth, 14.00

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Blyth Harcombe

Hywel Harcombe has been appointed managing director of Beckman Instruments. He was previously general manager for the company at Glenrothes and, before that, operations manager.

Ian Matthews has become a director of Time Utilising Business Systems of Leicester. He will have sole responsibility for the production of application software. Matthews joined TUBS as software production manager from Seicon in Iran where he was a consultant.

Chris Warwick has joined BOC Datasolve as sales manager responsible for accounts in Wales and the West. He was previously a sales consultant with ICL Dataskill in Cardiff.

Gordon Ruffell has been appointed senior sales executive for Gordon and Goch computer group's stockbroker accounting service. He was formerly a sales manager with Scan, and in his new position will be responsible for financial systems.

Previously data processing manager of the stockbrokers James Capel, John Heath has become financial executive adviser for stockbroking and city systems with Gordon and Goch.

Keith Knowles has joined Anderson Jacobson as Northern region field engineering manager, with responsibility for all installations and service of equipment in the North Midlands, Northern counties and Scotland. Before joining the company, he was Northern region service manager with Automatic Business Machines.

Elisabeth Segal has joined Master Resources of Wilmshurst, as a consultant. She has previously worked as public relations officer for a branch of Literacy Volunteers of America in New York.

John Sheffield has been promoted to head of software with Atkins Research and Development, of Epsom. He was previously ASAS support manager. Dick Henrywood has become marketing and sales manager, responsible for ASAS and the company's consultancy services in engineering mechanics.

APPOINTED to the NCR Corporation board of directors are Richard Terrell and Edward Schlegel. Terrell is former vice-chairman of General Motors and Schlegel is executive vice-president and a director of Caterpillar Tractor Company.

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ITS OWN S100 BUS system by end of year

THERE is a growing possibility that Abacus Computers, a computer manufacturing firm last year by ex-Commodore man Derek Rowe, could, of the year, to complement its worldwide distributorship for Texas Instruments (TI) range of hardware.

Rowe, who has many years' experience in electronics design, fact he has five other companies apart from Abacus, which specialises in various aspects of design consultancy, especially for the military, has strong views on what the ideal small computer system should contain.

"It should have a minimum of 60K bytes of RAM that can be expanded," he said last week, "with one or two floppy disks either of the large type, or to double sided double density mini. There should be plenty of I/O capability, especially for high speed printers, and the should be a memory mapped VDU with a minimum of 4 characters width."

Particularly important, he feels, is a good quality surge transient proof power supply which stops the system going mad when something else is switched on, "and he would be interested in firmware, which he feels might be all right for hobby computers, but is not for professional systems."

The TI kit comes fairly close to this ideal already, he says, "though it only has 60K bytes, a maximum, and is too expensive for a mass market."

Some new developments, expected this year for the hardware.

An M805-based CPU had expected shortly, which will, at 5 MHz, and later in the 10-bit system, based on the 8080 processor is due to be introduced. This will use a version of the S100 bus, figured to run 16-bit data addresses.

Also expected, in about months, is a hard disc system. Using Calcomp will offer 20 Mbytes of with 10 Mbytes fixed at Mbytes removable.

Its new address is 6 Soho Mills, Woodburn Green, Bucks. Tel: Bourne End (062 85) 27072.

ANOTHER company has entered the microcomputer hire business, this time at the very low end of the product spectrum. Emprise, of 25 Carlisle Close, Colchester, is renting evaluation systems for National SCMP, Intel 8080, Motorola 6800, MOS 6502, and Zilog Z80 for £4.70 per week.

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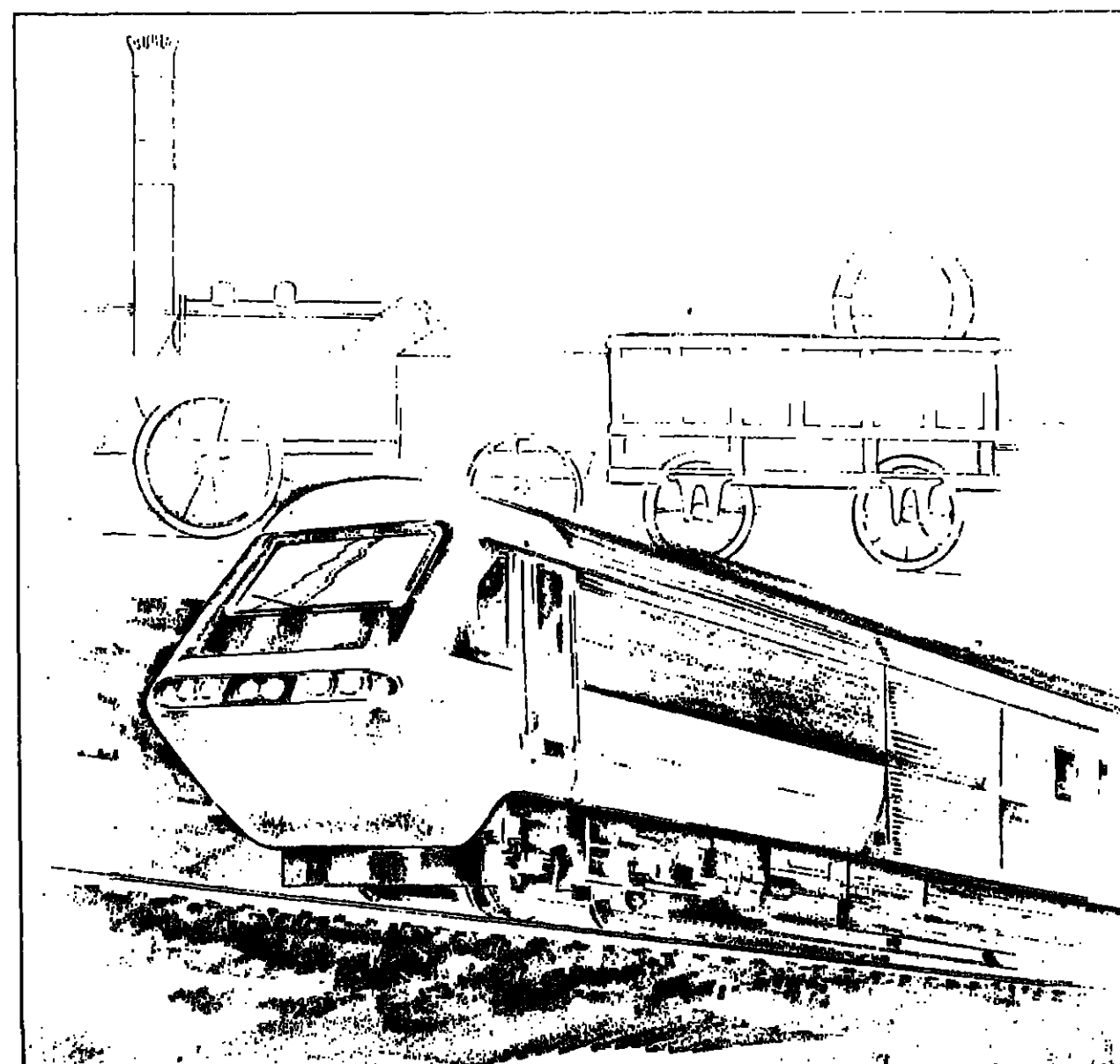
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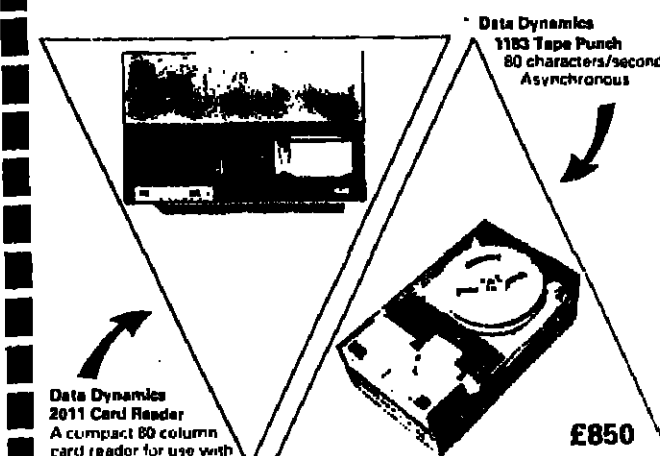
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OP SPOT

STRANGE as it may seem, in view of all the controversy and concern surrounding the use of the units, VDUs might have an indirectly beneficial effect on the health of the operators.

This will come about if the battery of eye tests drawn up by the VDU Eye Test Advisory Group (VET) — a team of medical experts — is accepted and implemented on a broad scale.

It is extremely unlikely that VDUs are a health hazard in themselves, so users of the devices should not be unduly concerned or worried.

Feelings of discomfort and fatigue are more likely to be the result of defective sight or poor posture, coupled with the nature of the work and the VDU operator is involved in.

Nevertheless, the units are becoming more and more widely used and research into the matter will do much to allay any fears VDU operators might have.

And, like those of any other persons involved in predominantly visual tasks, a VDU operator's eyes and sight would benefit from long-term monitoring and testing.

I make these points after speaking to Tom Stewart, chairman of the VET Advisory Group and an ergonomist with management consultants Butler Cox and Partners. He has also been involved in research concerning the health hazards of VDUs on behalf of IFRA, the

Experts say VDUs may benefit your health

International Research Association for Newspaper Technology.

Said Stewart, "We have to be careful not to go overboard about VDUs; we must also consider the people who have to read hand-written data from paper."

"Look at what's written there," he continued, pointing to his hastily scribbled notes. "That would be much harder to read than anything on a VDU screen."

But if that is the case, why should VDU operators be treated differently from others involved in work of a largely visual nature?

Stewart pointed out that the matter can be approached in two ways.

He said, "Some might say — all right, VDUs are not a health hazard, so there's no need for any extensive research or study."

"My reaction is that everyone should have their eyes tested more often, anyway. There is nothing to be lost and everything to be gained by testing the sight of VDU operators over a long period. And if the operators benefit from the greater attention, that's fine."

The battery of tests proposed

by the group in a discussion document called Eye Tests for VDU Operators (CW, December 7, 1978) may be administered by any optician and should take less than 30 minutes for each person tested.

Said Stewart, "The package is similar to that being used by the Post Office in a study involving some 600 clerks who are all doing similar work, but only a half of whom are using VDUs."

"Our tests are not new, but cover everything that we feel is necessary. We have included the sort of test everyone would expect — that for visual acuity, or clearness — plus others for those who wear glasses. There are also tests for the functioning of the eye muscles."

According to Stewart, it would be possible for an optician to visit an installation and test the entire operations team during the course of a day or two. That would depend on the

size of the site. He also mentioned that some companies give their employees medicals quite regularly and that the eye tests could be included with little trouble.

The group has received an excellent response to the discussion document and, according to Stewart, several companies are already interested in adopting the proposals.

Said Stewart, "We put out the document in an attempt to help people who are eager to do some testing of their own. Some companies are already doing so."

The group would like to set up some sort of central file containing results of the tests, but Stewart is fully aware of the complications involved.

He said, "When you start talking about setting up a database of this sort, all kinds of medical record and privacy issues crop up."

Other organisations and

By Bernard Allen



Tom Stewart

Stewart went on to stress that the nature of the work performed by VDU operators is of paramount importance in eye-strain and fatigue considerations.

He said, "Mainframe operators tend to use the screens in a different, less intense manner than persons involved in entering and editing data."

Therefore, he considers that mainframe operators might be less prone to eye-strain and fatigue. But they face special problems: often they type from a standing position, stooping to reach the keyboard.

He said, "Systems tend not to cater for the fact that there is an enormous difference in size between a big guy and a tiny girl. Yet both are expected to use the same equipment."

He would advocate systems which allow as much adjustment as possible.

"Screens which swivel, and detachable keyboards are good as they allow for individual differences and preferences. Similarly, consoles placed at a level which allows the operator to key from either a standing or sitting position can be very useful, but often too little attention is paid to the matter," he said.

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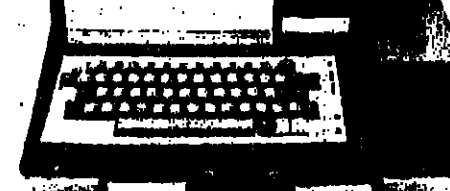
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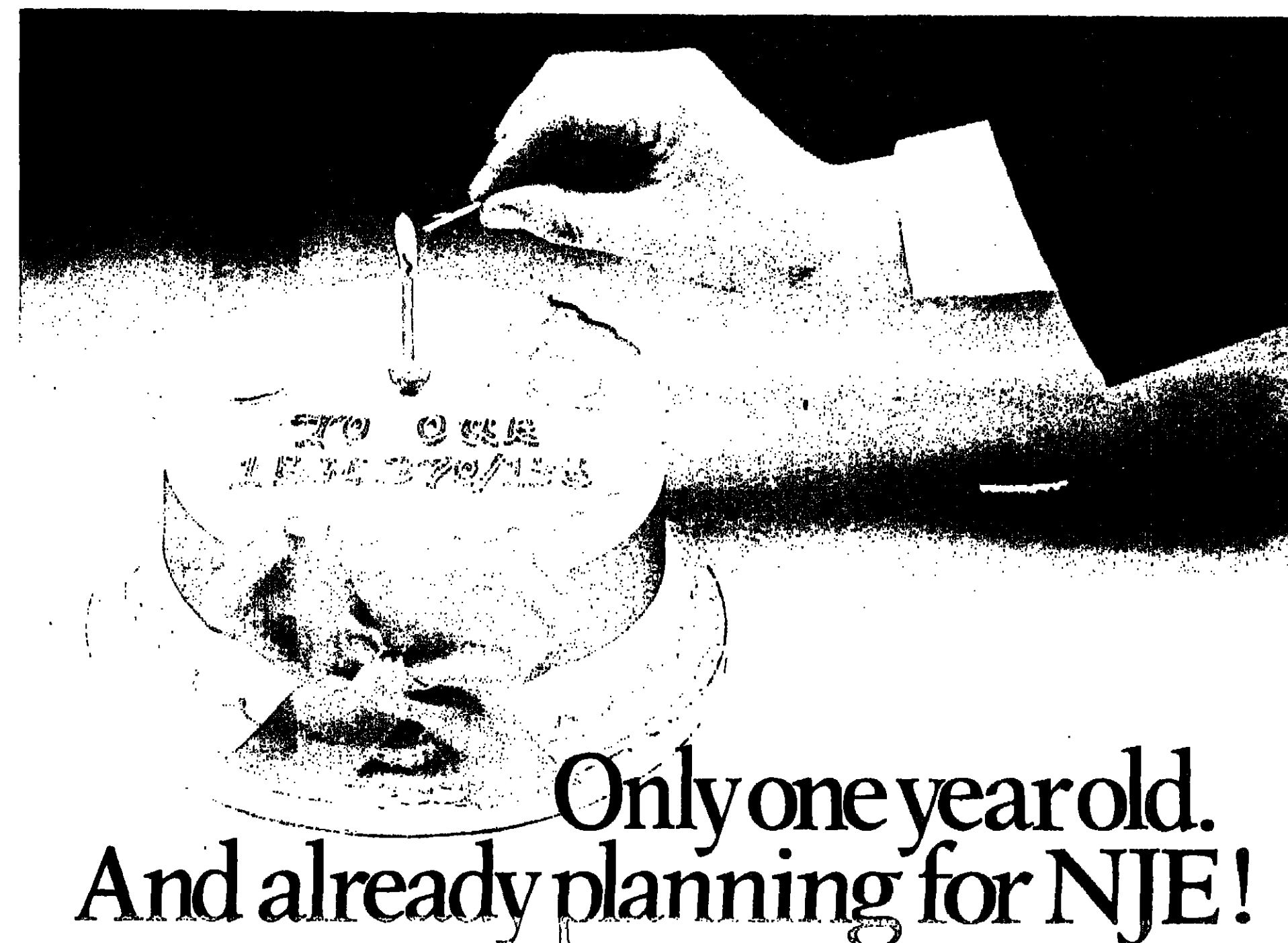
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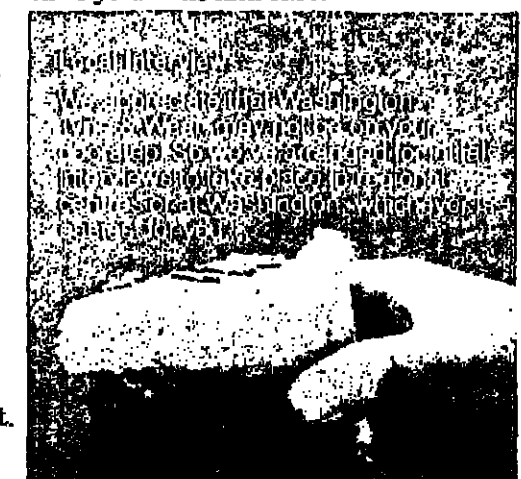
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The variety of systems supported provides
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To apply, please write, complete the
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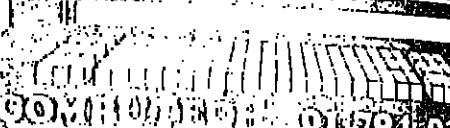


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Greater Manchester Council

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Applicants should ideally have a degree in a
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Conditions of Service include removal, legal, etc.
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As a result of continued expansion of Management Services activities within the
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Additional experienced staff are invited to share in the expanding work-load to
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To establish a team to commission and support the new mainframe installation running MVS/NJE
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Programmers

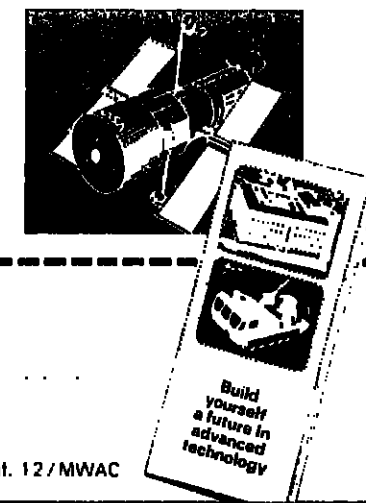
To work on the development of batch and on-line systems. Candidates should have had 2 years'
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To help you settle in the West Country, we offer full professional guidance, including
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For further details applicants (male/female) should return the
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For further information ring Brian Dadds, ext. 230,
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£2987-£3338 plus £312 and a shift
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The computers at the Polytechnic include a DEC -
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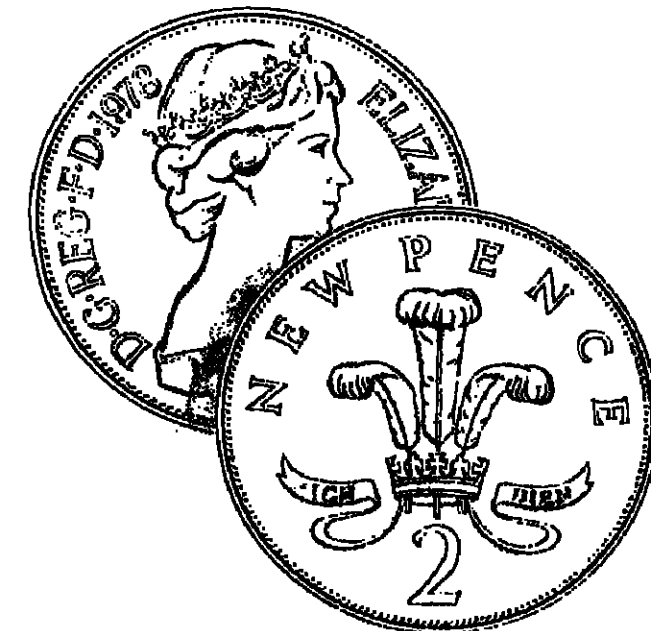
Experience of DEC equipment or a time-sharing
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Further details and form of application
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Applications to be returned as soon as possible.

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the answer for you.
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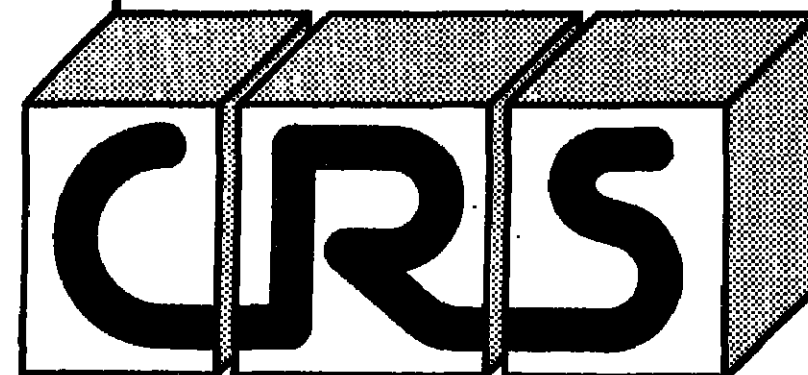
All computer development is centralised through the Systems Services Department based in London. Due to continuing demands for the department's services, additional D.P. Professionals are required to extend the services into new functions and areas.

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Actual starting salary will depend on individual qualifications and experience, however competitive salaries will be offered to successful candidates and supported by a substantial range of fringe benefits.

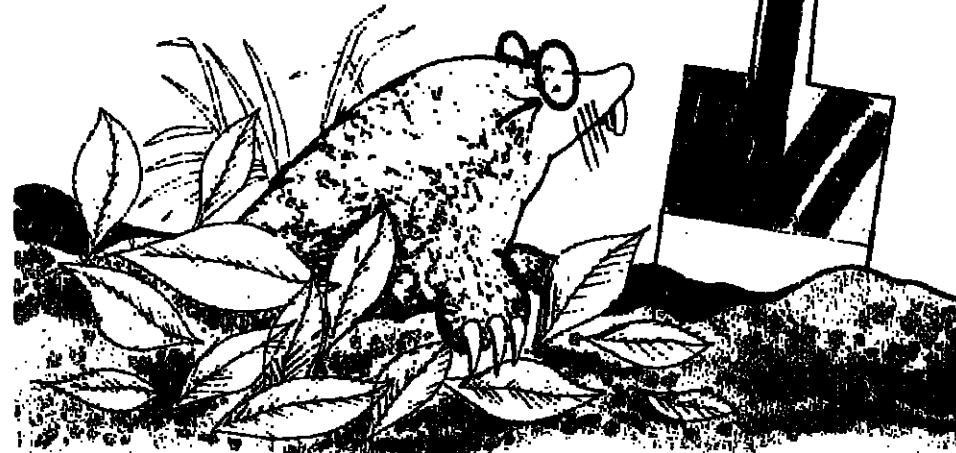
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Closing date is fourteen days from the appearance of this advertisement.

UNIVERSITY OF BRISTOL

Wellcome Comparative Anaesthetic Laboratory
Department of Veterinary Surgery

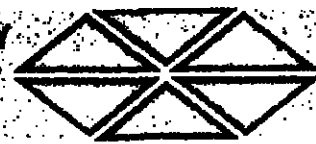
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Applications are invited for a basic scientist to participate in research in a study of the uptake and distribution of inhaled anaesthetics in large animals. Applicants must have experience of computer programming and modelling.

The appointment is for two years and the starting salary will be up to £3883 per annum. (Scale under review).

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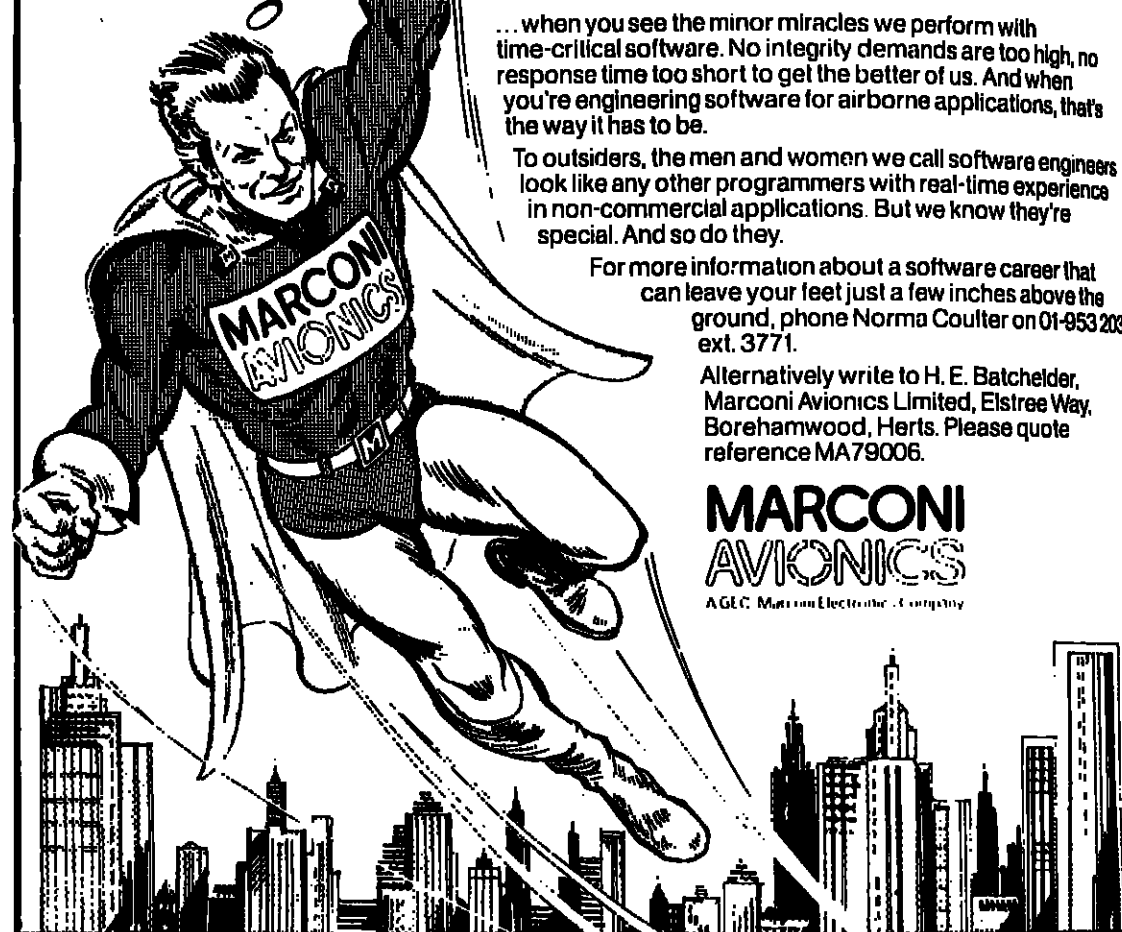
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- preferably from design through to implementation
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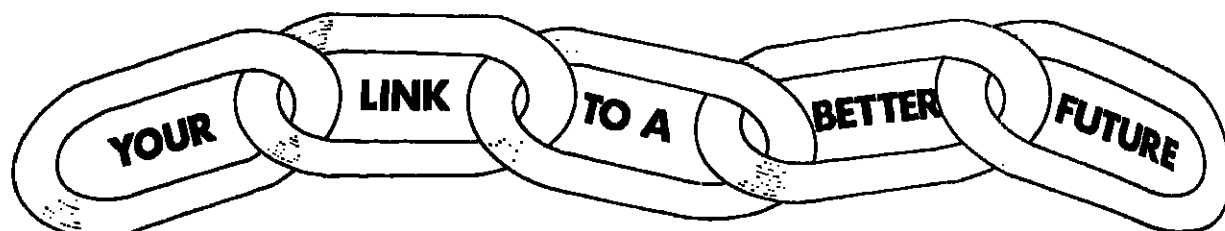
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Due to an internal promotion, our client has a vacancy for a programmer on the Bonded Abrasive Systems Team. The successful applicant will be involved in the development of new projects to be installed throughout Europe, and will also assist in the day-to-day maintenance of established systems in U.K., Germany and, in the near future, France. A minimum of 2 years' COBOL experience is essential and OS JCL is desirable. Applicants who have a knowledge of CICS programming will be preferred.

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To generate and maintain the following COBOL fast/dump restore, SMP, SPMOL, SORT/MERGE, Tape Management system VSAM. In-house software OS/VS1, SMF collecting and reporting, VS1 Performance Analyzer data collection and reporting, General System head forecasting, Programmer/Systems Liaison, General Operation Support and Software package evaluation. Candidates with a majority of the above will be considered.



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D.P. Recruitment Specialists

MANAGEMENT, PROJECT LEADERS, SYSTEMS ANALYSTS

SOFTWARE MANAGER. At least 6 years in Programming and Systems Design with experience of Machine Code or Assembly language, understanding of V.R.C. and Micro Computer Hardware, Cassettes and Floppy Discs. Communicative person preferred, able to use own initiative and deal face to face with customer situations. Area: West Midlands Salary: To £7,500 plus company car and expenses. Ref: M43

BUREAU SALES SUPERVISOR required by International Computer Manufacturer to lead small successful sales team. Extensive systems sales experience within a bureau environment. This management position is based in Birmingham but travelling throughout the Midlands, Wales and West Country will be required. Quota earnings £8,500 + company car and expenses. Ref: M41

PROJECT LEADER. At least 4 years in Systems Analysis and Design together with a formal Credit programming background using ICL Hardware. On line and Batch applications essential. Area: Birmingham Salary: To £5,500 Ref: SA187

PROJECT LEADER. At least 4 years' Commercial Systems specialising in financial applications especially Order Processing or General Ledger. Area: West Midlands Salary: package around £6,500 plus liberal car and mileage allowance. Ref: SA219

SYSTEMS CONSULTANT required for consultancy company, mainly specialising in feasibility area. Communicative person preferred with ability to work on own initiative. Area: Derbyshire Salary: To £8,500 plus car and bonus. Ref: P200

SYSTEMS ADVISOR required by International Mini-computer manufacturer for Pre and Post sales activities. They would be required to specialise in implementing software packages. A formal programming background is required plus a minimum of 2 years' Systems Analysis. Although the position is based in Birmingham covering the Midlands area occasional travelling throughout the U.K. would be required. Salary: To £8,500 plus bonus and Car allowance. Ref: SA201

SENIOR SYSTEMS ADVISOR for main frame manufacturer. At least 4 years' commercial systems including knowledge of Cobol or RPG II. Area: Leicester or Bristol Salary: £16,000 plus car allowance and generous expenses. Ref: SA125

SYSTEMS SUPERVISOR. At least 4 years in Analysis and Programming in RPG II. Knowledge of check control or order processing applications an advantage. Area: Bristol Salary: To £6,000 Ref: SA198

SYSTEMS CONSULTANT. Experienced with IBM small mainframes and Mini. Language RPG II. Area: Gloucestershire Salary: To £6,500 and Company Car. Ref: SA160

SENIOR SYSTEMS ANALYST. For development of commercial systems using PDP 11-14. Some client contact and trouble shooting involved. Area: Gloucestershire Salary: To £6,000 Ref: SA216

SYSTEMS ANALYST. At least 3 years' experience using IBM System 3 hardware. Area: Nottinghamshire Salary: To £6,500 Ref: SA206

SYSTEMS ANALYST. At least 2 years' Systems design with programming background. Knowledge of Database and Real time an advantage. Area: Nottinghamshire Salary: To £6,000 Ref: SA125

SENIOR ANALYST. At least 4 years in D.P. Systems. Area: Loughborough Salary: To £6,000 Ref: SA120

SENIOR SYSTEMS ANALYST. At least 4 years' Commercial applications. Area: Nottinghamshire Salary: To £6,000 Ref: M18

JUNIOR SYSTEMS ANALYST. Around 12 months' systems experience. Area: Birmingham Salary: To £4,500 Ref: SA210

PROJECT LEADERS & SYSTEMS ANALYSTS. Ongoing to expand our client's working D.P. Personnel at various levels. Area: Country Salary: To £6,000 plus general relocation package. Ref: SA214

ANALYSTS/PROGRAMMERS

ANALYST/PROGRAMMER. At least 1 years' commercial applications for IBM Systems 34 RPG II an asset but not essential. Mainly Systems development work. Area: West Midlands Salary: To £6,000 Ref: P177

ZAMBIA ANALYST/PROGRAMMER. At least 3 years' experience using IBM Systems 3 hardware. Minimum period of contract 2 years. Salary negotiable plus expenses and company car. Ref: M15

TECHNICAL SUPPORT ANALYST/PROGRAMMER. At least 2 years' commercial applications including Production Control. Main manufacturer. Area: Birmingham Salary: £5,000 plus company car and expenses. Ref: SA197

PROGRAMMER/ANALYST. Required at least 2 years working with IBM small mainframe or mini. Real-time experience essential for Pre and Post Sales Support work. Area: Staffs Salary: To £8,000 plus generous car allowance. Ref: P189

SENIOR ANALYST/PROGRAMMER. With RPG II experience. Senior Programmer without Analysis experience considered. Area: Rural Walsley Salary: To £6,000 Ref: SA180

ANALYST/PROGRAMMER. 1 year plus Cobol or willing to retrain experienced programmer in Cobol. Area: Connock Salary: £5,000 Ref: P140

ANALYST/PROGRAMMER. At least 18 months' Programming in RPG II. Area: Bickley Salary: £5,000 Ref: P165

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CHIEF PROGRAMMER. At least 4 years in programming with good working knowledge of PLAT for MUMPS. Area: Staffs Salary: To £7,000 Ref: T122

FORTHAN PROGRAMMER. With real time and interactive experience to work on Marketing and Production Control Systems. Permanent or Contract position. Area: South Wales Salary: Negotiable Ref: P110

PROGRAMMER. Must have experience in C.P.A. using IBM Internally. Travelling throughout U.K. involved. Salary: £4,500 plus expenses. Ref: P181

SUPPORT PROGRAMMER. For Pre and Post support. At least 2 years' using Cobol, RPG or Assembly. Mainframe manufacturer. Area: Birmingham Salary: To £6,000 Ref: P14

SYSTEMS PROGRAMMER. For Software development around 2 years' programming experience with knowledge of Cics. Area: Lancashire Salary: £4,500 Ref: SA198A

PROGRAMMER. At least 18 months' Programming in Cobol. P.L. 1 or Assembly. Area: Bolton Salary: To £5,000 Ref: P157

SUPPORT PROGRAMMER. Required by Mainframe manufacturer. At least 1 year's experience in commercial programming language. Area: Nottinghamshire Salary: To £5,000 plus expenses. Ref: P121

D.P. OPERATIONS

OPERATIONS PLANNING ASSISTANT. Must have several years' experience with IBM Workday using JCL, OS together with a knowledge of Software or packages. Area: Staffs Salary: £6,000 Ref: SA176

OPERATIONS TEAM LEADER. At least 3 years' ICL 1800 experience with sound knowledge of George III. Area: Wiltshire Salary: £11,500 Ref: M116

SHIFT LEADER. At least 4 years' experience with ICL 1900 Hardware using George II. Area: Birmingham Salary: To £4,500 Ref: P193

OPERATOR. 2 years' plus experience using IBM PDS/VS. Area: Nottinghamshire Salary: £4,000 plus Ref: P152

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OPERATOR. At least 18 months' Operating ICL 1900 under George III. 2660 under DME. Area: Lincolnshire Salary: £4,500 Ref: P148

SENIOR COMPUTER OPERATOR. At least 18 months' using IBM OS/VS. V5 Salary: To £3,000. Area: Birmingham Ref: P149

PUNCH ROOM SUPERVISOR. Must have supervisory experience plus 1 years working in a Punch room. Area: Birmingham Salary: £13,500 Ref: P151

Contact: Graham Aston, M.E.C.

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NR. ILFORD

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TEAM LEADER	W/LONDON	To £8,800 + Relocation	Project management and quality control of development phases — design and specification of system. IBM background.	REF: 2038/SM
SYSTEMS SUPPORT ENGINEERS	EUROPE	£10,000 + +	LONDON-based systems engineers for overseas clients. Technical advice, planning and implementation. IBM compatible mainframes.	REF: 2055/SM
SENIOR SYSTEMS	CITY	£8,500 + Perks	International information and real-time systems to finance and banking. IBM background + investment accounting experience.	REF: 1958/SM

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SYSTEMS AND PROGRAMMING

SENIOR ANALYST PROGRAMMER	BUCKS	To £7,500 + CAR	Work on various projects. 4 years' programming experience, including min. 2 years RPGII and systems analysis.	REF: 2076/SP
TEAM LEADER	CITY	£7,800 +	Development of major international message-switch systems. MACRO/ASSEMBLER, RSX11 and RTL11 experience. Asset message-switch.	REF: 2006/SP
ANALYST PROGRAMMER	N.W. KENT	To £6,500	Multi-million pound organisation. Commercial applications — approx. 3 years IBM COBOL and analysis.	REF: 2078/SP
SENIOR PROGRAMMER	LONDON	To £7,000	Expanding dept. with IBM and mini computer. 3 years IBM COBOL to work on variety of business packages.	REF: 1951/SP
PROGRAMMER	N. LONDON	£7,500 + +	Good IBM PL/1 Programmer, hopefully with some exposure to systems and design to become involved in project management and commercial systems.	REF: 2056/SP

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£450	SYSTEMS PROGRAMMER	CICS ASSEMBLER	HOLLAND

£220	PROGRAMMERS	DOS JCL COBOL AN ASSET	HERTS
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- ★ High remuneration assured throughout the year
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IBM ASSEMBLER

Salary Range £6000-£8000 + Benefits
South Coast

A chance to work with minis

This is an unusual opportunity for experienced IBM ASSEMBLER programmers to work with both mainframe and mini-computer. As well as IBM 370 hardware an in-house DEC PDP 11/70 is utilised and programmers will be developing on-line and real-time programs for the latter.

Applicants should have at least 3 years ASSEMBLER experience gained in an IBM 360/370 environment. DOS/VS and/or CMS knowledge would be valuable but is not essential.

Full training will be provided wherever necessary. Work will be as a member of a small team so programmers must be self-motivated and be able to accept responsibility for all stages of program development.

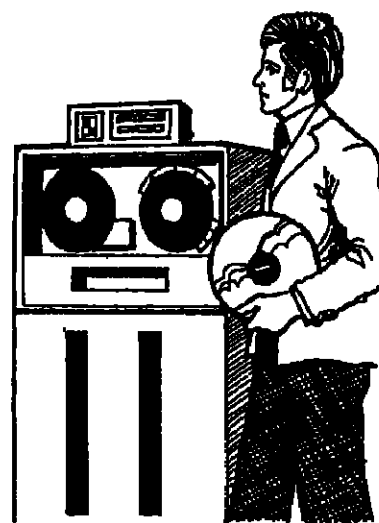
The company is the Schroder Life Group, an expanding life assurance company, located in Portsmouth, ideally situated for the excellent residential and recreational facilities of the South Coast. A first rate benefits package is offered which can include mortgage subsidy, relocation assistance, holiday to 22 days, L.V.'s, non-contributory pension, and season ticket loan.

Positions open to male & female applicants, please telephone (24 hour service)
for initial discussion or write to address below. QUOTE REF. CW 108-9H

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Computer Operators



Come and join our team at Leavesden where we are currently operating an IBM 370/138 (1 Mb) under DOS/VS with POWER/VS and CICS/VS. If you have one year's IBM/DOS experience you could be just the person we are looking for. Contact us today!

We will offer you an attractive commencing salary plus all the usual benefits of working for a major Company. There is also the superb Rolls-Royce Sports and Social Club.

For further information or an application form please contact PETER BANTON, SENIOR RECRUITMENT OFFICER, ROLLS-ROYCE LIMITED - AERO DIVISION, LEAVESDEN, WATFORD WD2 7BZ, or telephone GARTON 70935

These positions are open to both male and female applicants



AERO DIVISION

D.P. MANAGER

A leading distribution company operating mainly in Lancashire and Yorkshire is ready to expand by developing a Real Time Computer System with remote terminals in each of its 20 branches.

They are looking for an Analyst/Programmer who they consider to be 'senior management' material, capable of managing the department, and developing the system. The successful candidate will probably have a degree or professional qualification and at least 3 years' experience in RST operating systems could be an added qualification. The ability to organise and manage people is no less important.

Salary will be negotiable at £6,000+ and fringe benefits will include a company car, private medical insurance etc.

Full details please to Box 1008, Computer Weekly
All applications will be treated in strict confidence.

★ REAL TIME ★ ★ SYSTEMS DESIGNERS ★ ★ PROGRAMMERS ★

Permanent or contract to work with our project teams developing industrial and commercial applications in COBOL, CORAL, RPG, PLAN, BASIC for clients in London and surrounding areas.

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computer consultants

Martin and Voorhees Associates

Transportation and Planning Consultants

have a vacancy for a

TECHNICAL ANALYST/ PROGRAMMER

in their London office

The company, which employs about 40 professional staff, is one of the most prominent consultancies in its field. There is a vacancy in the Computer Section for an analyst/programmer to be specifically involved in development and support of the company's extensive suite of transportation planning programs. The suite, known as TRIPS, is a sophisticated and efficient package which is used within the company and by a growing number of external clients. A substantial programme of development is in hand.

The successful candidate will be involved in:

- Designing and implementing enhancements to the TRIPS package
- Supporting internal and external users
- Documentation improvements
- Program conversions for various mainframes and minicomputers

Applicants should be proficient FORTRAN programmers, preferably with a recent degree in mathematics or computer science. A high level initiative is essential.

Salary is likely to be in the range of £4,000-£5,000 but will be based on the candidate's experience and ability.

Send CV without delay to:

Theresa McCaul
Martin and Voorhees Associates
112 Strand
London WC2R 0AA



Instron is one of the most successful and advanced manufacturers of materials testing equipment in the world. Our products are widely used in research, development and quality control; have won many awards, including Queen's Award for Export Technological Achievement.

REAL TIME/ SOFTWARE PROFESSIONALS £5,000-£7,500

Do you seek the responsibility and excitement of working with a small team of hardworking professionals on creative and demanding projects?

We require staff for software design and programming to software responsibility within multi-discipline teams engaged in a wide range of projects, involving mini-computers and microprocessors.

We are in the technological forefront in applying mini-computer and microprocessors to our materials testing instrumentation business. The opportunities in our world-wide market are so enormous we can give you as much opportunity and responsibility as you can handle.

You will need a technical/science degree and at least 2 years' experience of high level scientific and low level languages. If you have worked on original operating systems, so much the better.

If you have the experience we need and value your future, then Instron and Instron have a mutual interest.

In keeping with the high standards we maintain, the company is able to offer excellent starting salaries with four weeks' holiday and appropriate fringe benefits, which include a non-contributory pension and life assurance scheme. Reasonable relocation expenses will be paid as appropriate.

Please ring the Personnel Department, High Wycombe (0494) 33333 or write to the Personnel Manager, Instron Ltd, Coronation Road, High Wycombe, Bucks. Men or women need not apply.

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OPPORTUNITIES in OPERATIONS

OPERATIONS MANAGER IBM SYSTEM 3

HERTS.

£8000-£8000 p.a.
+ mortgage assistance

A leading life assurance company requires an Operations Manager, who can demonstrate both sound technical skills and leadership ability.

Currently using IBM System 3 hardware, the company has reached a very interesting stage of development with plans to introduce an IBM System 38 next year.

In addition to managing a total of 12 staff, including operators, keypunch and Data control sections, one of the prime responsibilities will be to be actively involved in the introduction of the new machine.

If you have sound knowledge of IBM System 3 hardware and software and, preferably, RPG II programming, then it should certainly be worthwhile following up this opportunity.

Reference 2196

IBM OPERATORS

NORTH LONDON

c. £3800 inclusive

A manufacturing company, based in North London area, have a vacancy for an experienced IBM Operator to join their IBM 370 DOS/GRASP installation.

Working a two-shift system, the successful applicant will be working in an environment which provides good training facilities and excellent chances of promotion into the programming and systems areas.

Reference 2189

CONTROLLER — D.P. PLANNING

S. LANCs.

c. £4500 + Benefits

A unique position with a stable and well-established organisation in South Lancashire. With large-scale redevelopment in progress, new installation and hardware scheduled for later this year, a D.P. Planning Department has been established to co-ordinate activities.

Responsibilities include hardware installation co-ordination, liaison with Systems Development Departments and manufacturers plus project control.

An operations background would be useful, and history there could be progression to full time system analysis or programming.

In addition to good basic salary, there are very attractive fringe benefits.

Reference 2172

TECHNICAL SUPPORT CO-ORDINATOR

HERTS.

£3500-£4500 p.a.
DAYS ONLY

One of the largest U.K. Computer Service Bureaux have a vacancy for an additional Technical Support Group Co-ordinator to assist in the smooth day-to-day running of their communications network.

Liaison with users, both group and external clients, and teleprocessing equipment suppliers to maintain a high standard Communications service, will be the prime responsibilities.

Senior Operators or Shift Leaders who have reached a stage in their career where they are seeking a new challenge, will find this an excellent opportunity.

If previous teleprocessing experience has not been obtained, then full training will be given.

Reference 2118

COMPUTER SERVICES MANAGER (OPERATIONS)

S.W. LONDON

ICL 2904

c. £7000

We have a requirement for a Computer Services Manager for a new ICL 2904 installation in S.W. London. The Company provides a specialist business service. The implementation is currently taking place.

The person selected should have experience in teleprocessing systems, including both user departments, who have been successful in the past. The person selected should have responsibility for the D.P. Department's reporting directly to Senior Management.

Reference 2111

SENIOR OPERATOR (SHIFT LEADER POTENTIAL)

W. LONDON

IBM 370

to £8000 inclusive

Good IBM OS operating experience is required for this West London installation. Two years' operations experience could command a Senior Operator position, and 3 years' experience as Shift Leader position with an inclusive salary of £6000.

The Company has an IBM 370 mainframe with a large network of Minis and operate a standard 3-shift system with a 5-day week.

Career progression is a must with this Company.

Reference 2217

OPERATOR — ICL 2903

MIDDLESEX

NO NIGHTS

£3500 inclusive

Why travel, why work nights when this position may be right on your doorstep?

A service industry, located in the Harrow area, have a requirement for an Operator to bring their Operations Department up to strength. Some operations experience is necessary, there are just 2 shifts so no night work.

Additionally, working conditions are excellent, including a subsidised restaurant.

Reference 2203

SENIOR OPERATORS IBM DOS VS/POWER VS

BANKING

TOTAL PACKAGE c. £4500
+ Banking fringe benefits

Be a Senior Operator and join the world of international banking!

Two vacancies have arisen with a leading international bank for experienced IBM Operators who have obtained at least two years' experience in a DOS VS/POWER VS environment.

The Computer Centre consists of twin IBM 370/138 computers under DOS VS/POWER VS/TASKMASTER and operates a three-shift system.

In addition to a very attractive salary package, you will also enjoy the benefits normally associated with banking, such as mortgage facilities.

Reference 2197

SHIFT LEADERS — ICL

WEMBLEY AREA

c. £4250 + O/T

Any ICL operating experience is acceptable for this ICL 2904 installation. The Company supplies technical equipment to specialist sectors of industry. They have on-line systems, and solely operate a 2-shift system although some overtime is available.

In addition to attractive salary package there is an extremely friendly working atmosphere.

Reference 2208

TO LEARN MORE ABOUT THE ABOVE VACANCIES,
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CHAT WITH MARILYN BLACK OR CORINNE INGRAM —
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Data Processing Manager
Phone Ascot (0990) 24726
N.E.M.G.I.A. Ltd., N.E.M. House
Kings Ride, Ascot, Berks SL5 8AD

Middlesex Polytechnic

Salaries: SS £3774 to £4644 plus allowance of £621 (2 adults) or £726 (3 adults)
 SO £3076 to £3774 plus allowance of £448.5 (adult) or £493.5 (2 adults)

Application forms and further particulars (quoting tel. 79 1354) may be obtained from the
 Officer, University of Bath, Claverton Down, Bath BA2 7AY, Wiltshire, or from the
 February 1979.

Ref. 5 / 1

The company offer excellent career prospects together with an attractive remuneration package. Initial interviews will be held in London in February.

Ref. 5 / 3

Ref 5/4

24 Grays Inn Road London WC1X 8HR Telephone 01-831 6055 Telex 299539 HAVEN G

P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Tel: Harrogate 66628

811

Barclaycard

Barclaycard's latest business developments include providing a complete service for retailers' own credit cards.

The computer system — developed with the BARIC Computer Bureau — will need to progress in response to planned growth and the requirements of individual retailers.

The Project Team requires:—

Project Controller

who will be responsible for the development of the system. Commencing salary £6374.

System Designer

who will specify the detailed requirements to BARIC and handle testing and implementation. Commencing salary £5625.

Business Analyst

to work on related aspects of the system. Commencing salary £4018.

Education to a degree level or equivalent is particularly important for the two senior positions, together with 2-5 years computing experience in a commercial or financial environment.

Fringe benefits normally associated with the Banking industry.

For further information, please apply giving full career and personal details, indicating which post is of interest to:—

P. E. Kampton, Manager, Staff Administration,
Barclaycard, Northampton NN1 1SG
Tel: (0604) 21100 extn: 2341

Database Designers & Analysts

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£6-8K (U.K.)

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£10,000 - £16,000 p.a.

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£8-9K

Classified

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360 Oxford Street,
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SENIOR SYSTEMS ANALYST

To develop a Major On-Line Communications System

A progressive international group is to develop a computerised communications system which will lead its field and transform the effectiveness of its business.

We are looking for an experienced Systems Analyst who will report to the D.P. manager for technical liaison and assurance with our outside Systems House.

Applicants should have at least 4 years' computing experience including some programming and at least 2 years' On-Line processing training.

The remuneration and conditions package for this key appointment will be very attractive and opportunities for further development exist in both the UK and the Group.

Reply in confidence by phone or letter to:

Mr. C. Morrow
Altred Marks Bureau Ltd.
8-9 Fifth Street, London, W.1
Tel: 01-497 7885

An international client with offices in London and Europe is entering another major expansion phase for which they require additional Database expertise including Project Leaders, Systems Designers, Analysts and Senior Programmers. The latter should be skilled in either PL/I, COBOL, Assembler or Mark IV. Both Database and Data Communications experience would be welcome. Applications are varied but include Banking systems, Airline booking and Stock control. Not less than two years relevant

Would you like to join the Dutch subsidiary of a world leader in Mini & Micro computer applications? The company itself is a British based international group with offices in five continents. They specialise in the supply of Bespoke turnkey systems based on Mini & Micro processors specifically in the Communications, Message Switching, Network, Process Control and basic software fields. Any assembler language is desirable. To meet their expansion goals they are

Aprestige Client with Headquarters in London and regional offices located in Cheshire and throughout Europe urgently requires the following: Real-time & On-Line Programmers & Systems Designers, Database & Compiler specialists with 2-5 years solid experience. Of particular interest would be people with relevant experience in one or more of the following: DEC with either BASIC, RTL II or CORAL, IBM or ICL with COBOL, Assembler or PL/I. Also Ferranti Argus or IMS or Database design specialties are welcome. The

A British Multinational corporation has several senior openings in their Austrian subsidiary. They require Analysts, Systems Designers and Analyst/Programmers with PDP 11 backgrounds. Ideally some of the senior applicants will have a military systems background and/or distributed processing experience. Whilst these positions are permanent it is not necessarily implied that the Austrian posting will be indefinite. The

Your Banking Involvement as a Business or Systems Consultant will earn you excellent financial rewards with this "blue chip" Systems House and Financial Consultancy. It's a definite plus point to have been associated with mini computers operating in distributed processing environment and for those with current IBM System 3/32 or 34 knowledge then the financial and promotion prospects are even greater. The successful

CICS Analyst Programmer, O.S. or DOS with either COBOL or Assembler experience. Central London based. Salary dependent on experience to £7,250. Financial systems background preferred but not essential. Ref: 0102/6

DENMARK + GERMANY — IBM IMS and/or Univac 1100DBMS applications exposure required for early 1979 start. Prefer permanent career person but consider contract. Ref: 0102/7

BERKSHIRE/HANTS BORDER — Micro specialists (Intel 8080, Zilog Z80) required by turnkey systems supplier. Established U.K. company can offer outstanding career positions. Salaries to £8K+. Ref: 0102/8

BRUSSELS — T.P. and D.B. Applications and Software Programmers. Prefer IBM software. Full relocation expenses and vast range of real company benefits whilst salaries to £16K. Interviews at our London office. Ref: 0102/9

experience will be considered and for more senior positions 4 years is the minimum. U.K. based personnel may have frequent opportunity to travel to Europe and the U.S. (if desired). Europe based personnel are given very generous expenses and frequent paid trips back to the U.K. Salaries need not to say are going to be well above the norm in keeping with the client's prestige and the importance which they place on the acquisition of these key personnel. Ref: 0102/1

creating numerous additional specialist project teams requiring Consultants, Project & Team Leaders, Analysts and Programmers at various levels, specifically a) 5 years plus b) 2-5 years c) Trainees up to 2 years. If the idea of working at the sharp-end of sophisticated technical computer pioneering appeals and joining a very prestigious company is meaningful in your career development then you must give consideration to these opportunities. Ref: 0102/2

scope of projects is both broad and demanding and certainly in keeping with the prestige of this client. You will play an important role in project development and will be given considerable autonomy in developing your technical expertise and enhancing your contribution to the work of this reputable group of which you will be more than proud to be a member. We anticipate Salaries of between £6 and 9K being accepted. Ref: 0102/3

opportunity to transfer to other European installations or back to the U.K. is open to all applicants. Salaries and associated fringe benefits will not only reflect the local cost-of-living but are computed to provide a realistic standard-of-living improvement. Emphasis will be placed on depth of previous experience and stability in job progression throughout your career. Ref: 0102/4

candidate will be part of a project team of 6 comprising Systems/Business Analysts and Programmers developing and implementing a new foreign exchange system for the city offices and its European counterparts. Interviews are scheduled for early February in either our offices or the client's City branch office. Appointments can be arranged for those who prefer not leave their present work commitments. Ref: 0102/5

CITY — Programmers for Merchant Bank with 1900/2900 experience including COBOL, Driver &/or Max/minp would be advantageous. Salary c. £5.5K + mortgage. Ref: 0102/10

HARDWARE ENGINEERS (Minis) with a desire to work in the training division of a major Mini computer manufacturer. A pre-requisite is experience of 8 or 16 bit minis. Salary up to £5.5K. Ref: 0102/11

COBOL or PL/I programmers are required contract or permanent by a City Institution. IBM OS is preferred but DOS considered. Two years min. experience essential. Salary: From £5 - 5.5K plus 2 1/2% mortgage subsidy or £250 p.w. Ref: 0102/12

BASIC PROGRAMMERS with either commercial or scientific backgrounds required by Important Central London based Client. Permanent or contract positions available at salaries of £6-8K or £235 p.w. up. Ref: 0102/13



Head of Computing (2nd Advertisement)

Applications are invited for suitably qualified candidates for the post of Head of Computing Centre. Salary Scale: £5874 - £9584 (Previous Applicants are still being considered). Further details and application forms from: 'Personnel', The Polytechnic, Wulfruna Street, Wolverhampton. Application forms to be returned as soon as possible.

SENIOR LECTURESHIP IN COMPUTING

Applications are invited to an important senior post in the Department of Computing and Control. An active interest in a relevant line of research is considered important. The successful candidate will be expected to play a significant role in future developments of the department.

Salary on Senior Lecturer Scale £7,808 to £9,283 plus London allowance and LRB benefits.

Further details may be obtained from Professor J. H. Westcott, Head of Department of Computing and Control, Imperial College, London SW7 2BZ, to whom applications including C.V. and list of publications and names of three referees should be made not later than 25 February, 1979.

SOFTWARE PEOPLE

INDUSTRIAL REAL-TIME SYSTEMS

£ Neg'l
+ Relocation

This systems house has a thriving business based on the development of total systems for advanced control applications in many areas of industry. Typically, their systems are built round DEC PDP/11 hardware, with Micro-computers now well established as system elements currently LS1-11, INTEL 8085 and RCA 1802.

The company is small — but with very substantial financial backing — and growing fast. So more people are needed who have experience in either high-level or Assembler languages, to participate in this growth. Training will be given to those with similar but relevant experience. In-house computing facilities are particularly good.

This is interesting and stimulating work, performed in congenial surroundings, with well-motivated colleagues. The location is Berkshire.

Please contact TONY BAKER on (01) 499 4501 (or write to him at the address below) for further information.

REF RW 5/1

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Join a small team of operations experts compiling and testing Operating Standards. Some travel to Scotland and Germany will be involved.

1900/2904, Cobol, on-line experience. Immediate start. 9 months.

To develop software on Micro systems. Starting soon.

ICL/IBM Cobol. Good knowledge of Accounting Systems. Start soon.

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Call BRIAN DAWSON on 01-499 4501 for details of these and other contracts available with HUTCHINSON SCOGGINS CONTRACTS LIMITED.

If you are thinking of becoming a Contractor in Operations/Programming/Analysis, HUTCHINSON SCOGGINS CONTRACTS LIMITED will be pleased to assist and advise you. Call 01-499 4501 now.

REF. RW 5/2

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London W1Y 0HE Telephone 01-499 4501

OPERATIONS

SHIFT LEADER OPERATOR

The Northumbrian Water Authority has just accepted delivery of its HONEYWELL Level 66 machine, and is seeking a Shift Leader and an Operator. Both of whom should be experienced in operating Honeywell hardware. They should also have a good knowledge of GCOS and other Honeywell software, together with a sound working knowledge of the control of Remote and Batch systems and Time Sharing. A 2-Shift system, overtime and rota week-end working are all features of our working, which attract plus payments on top of competitive salaries, which can be up to £4000 for the Shift Leader, and up to £4000 for the Operator post, depending upon the experience packages offered by the successful candidates. Applicants should possess valid driving licenses, and the Authority will be prepared to provide financial loans to enable appointees to purchase cars, if required. Consideration will also be given to assistance with relocation costs in appropriate circumstances.

Please write for an application form to: The Personnel Services Officer, Northumbrian Water Authority, Northumbria House, Regent Centre, Gosforth, Newcastle upon Tyne, NE3 3PX.

Northumbrian Water

TEESSIDE POLYTECHNIC COMPUTER CENTRE

The Computer Centre provides a computing service for the teaching, research and administrative work of the whole Polytechnic. It is equipped with a powerful Univac 1110 machine recently installed which will support over 80 terminals and an ambitious range of graphics devices.

To support the new machine a number of additional posts have recently been established. Applications are invited for the following post which offers an opportunity to join a growing team engaged on a number of interesting developments.

PROJECTS MANAGER (SYSTEMS SOFTWARE) — New post

£8,050-£8,702 (including supplements)

To lead a small team of Programmer/Analysts responsible for the maintenance, monitoring and enhancement of the Univac EXEC 8 Operating System and other systems software. In-depth experience of operating systems for large computers essential.

Candidates should possess a degree of similar level qualification in a suitable subject.

Application forms and further particulars from the Assistant Secretary (Academic), Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA, to whom they should be returned by Friday 18 February, 1979.

Major DME developments for 2900 and a new small system

Our work in progress could mean real career progression for you!

Bracknell, Berks;
Kingsgrove, Staffs
£4,000-£8,500

Join the company where exciting things are happening on brand new hardware! Right now we are working on major new Small System developments at Bracknell and Kingsgrove.

This could be your opportunity for real personal career progression. There will be considerable scope for your skills in one of our integrated development teams where both hardware and software people have the opportunity to work profitably together or you could find a rewarding future specialising in your chosen field.

Wherever you work you will find every opportunity for fast personal development and this, coupled with our unrivalled reputation for training, adds up to an offer not to be missed.

The successful application of your skills is vital to our total systems development. That is why we need: Programmers with assembler, operating systems development or microcode experience. Engineers with a background in state-of-the-art technology.

In both cases we expect you will be in your 20's with at least 2 years experience behind you.

Naturally relocation expenses and full large company benefits are available.

Interested? Call John Milner on Bracknell (0344) 24842 Ext: 2373 or Peter Mills Ext: 2169 or write to ICL, Lovelace Road, Bracknell, Berks. RG12 4SN quoting reference CW 1173

International Computers

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1011-1016

DYNAGRAPHICS FIELD SERVICE ENGINEERS

Due to expansion IMLAC International Limited, a world leader in Computer Graphic Display Systems, are currently looking for experienced Field Service Engineers, to support their existing PDS-4 and PDS-1 Systems and the NEW DYNAGRAPHICS range of Graphics Terminals.

The Engineers will operate from IMLAC's Amersham office, and would be expected to support sites throughout Europe and the UK.

Applicants should have at least 2 years' Field Service experience working on mini computers and peripherals. IMLAC are offering competitive salaries, company car, and an attractive Pension Scheme.

For further information, please call or write to:

John Bask
IMLAC International Limited
IMLAC House, 17 Chesham Road
AMERSHAM, Bucks.
Tel. (02403) 22107

PORTSMOUTH POLYTECHNIC Computing Centre

Senior Computer Operator

Post 774

The Polytechnic computer service is based on a large ICL 2960, using VME/8, and ICL 2904. An extensive communications network is being developed supporting terminals and remote job entry stations.

The Computing Centre seeks to recruit a Senior Operator who has at least three years' operating experience together with an 'A' level standard of education.

Salary up to a maximum of £5,149 including shift allowance, overtime and supplement.

SALES ENGINEER COMPUTER SERVICES

Applicants are invited to fill this new position created as a result of our further expansion. We are looking for someone who has already gained experience in selling in the Computer Services Sector and wishes to join a successful international group whose activities are totally related to selling third party computer hardware maintenance to manufacturers O.E.M.'s and End Users.

The successful applicant will join a small but dedicated team operating from our Head Office in Feltham, Middlesex and must be willing to travel throughout the U.K., and occasionally overseas.

An attractive salary will be negotiated and a contributory Pension Fund is in operation. A Company car will be supplied for your full time use.

Please write giving full details of your career to date marking your application Private and Confidential to:



The European Marketing Manager,
Systems Maintenance
and Services Limited,
P.O. Box 13,
Unitair Centre,
Great South West Road,
FELTHAM,
Middlesex. TW14 8NT.

The Dickinson Robinson
Group Limited

Computer Operator

Required to work a 3-shift system, on IBM 370/148, operating under DOS/VS, power VS, with EPAT, with remote job entry and TP Network.

Applicants must have at least two years' experience. We offer good working conditions, four weeks' annual holiday, contributory pension scheme, subsidised meals and help with relocation expenses where applicable.

Applications in writing to: Mrs. P. C. Hambrook, Personnel Officer, The Dickinson Robinson Group Limited, 1 Redcliffe Street, Bristol BS99 7QY, or telephone Bristol 284284, Ext. 257.

 DRG (U.K.) Ltd

UNIVERSITY OF BATH

LECTURESHIP IN COMPUTING

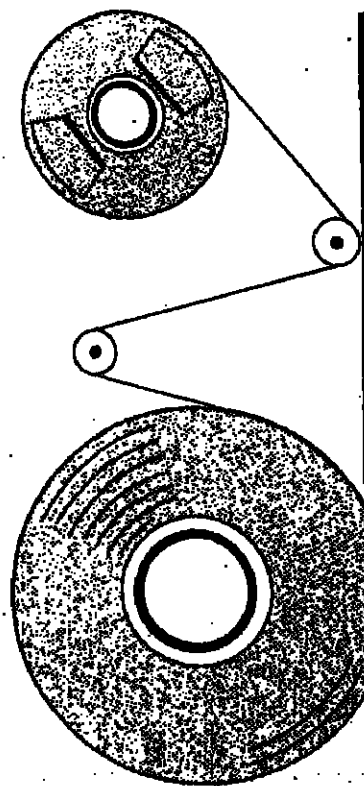
Applications are invited for the above new post in the School of Mathematics. The appointee will be expected to make a significant contribution to the research activities in Computing in the School. The starting salary will be set in the lower part of the Lecturers' scale (£3,883-£7,764 p.a.).

Further details and application forms may be obtained from the Personnel Officer, University of Bath, Bath BA2 7AY, quoting reference 78/22/CW. Completed applications should be returned by 8th March, 1979.

SUPERVISOR/ OPERATOR

Required to run IBM System 32 installation for Fleet Street office of international company. Salary in excess of £4,000 p.a. + guaranteed bonus. LV's, four weeks holiday pay.

Phone:
Mrs. Salinas
383 5033



Program yourself into a better job

If you have sound systems design and/or programming experience we have a number of interesting posts and offer excellent opportunities to gain valuable experience within a large and expanding computer installation concerned with a widely varied range of applications.

1. **SYSTEMS ANALYSTS:** up to £5,718

Applicants must have either a minimum of 5 years' relevant computing experience or at least 4 years' experience plus a degree, HND or equivalent qualification in computer science or other discipline with computing as a main subject. Candidates' experience must include a substantial period in systems design.

2. **PROGRAMMER ANALYST:** up to £4,912

Applicants must have either a minimum of 3 years' relevant computing experience or at least 2 years' experience plus a degree, HND or equivalent qualification in computer science or other discipline with computing as a main subject.

3. **PROGRAMMER:** up to £4,292

Applicants must have at least one year practical programming experience or hold a degree, HND or equivalent qualification in computer science/mathematics/statistics or other related discipline. First year students who expect to obtain this type of qualification in summer 1979 may also apply. Experience of ICL 1900/2900 series computer (including PLAN, COBOL, GEORGE Operating Systems and Direct Access) or mini-computers or the application of dedicated processes in the medical and scientific fields would be an advantage.

Grading and starting salary will be related to age, qualifications and experience. Write or telephone for an application form and further details quoting job references SB 92/78/CW to the Civil Service Commission, Rosapark House, Upper Newsonwards Road, Belfast BT4 3HR (telephone Dundonald 4585 ext 285). Informal enquiries may be made by telephone to Department of the Civil Service (telephone Belfast 780781 ext 2709) or Department of Health & Social Services (telephone Belfast 24431 ext 262).

The salary will be subject to review with effect from 1 April, 1979.

Completed forms must be returned to arrive not later than 15 February, 1979.

 **NORTHERN IRELAND
CIVIL SERVICE**

An opportunity to join a young, energetic and forward thinking team of engineers at the Digital Technology Centre of Plessey Communications & Data Systems Limited, Lenton, Nottingham.

Mini & Micro Processor Software Engineers

— preferably with a degree or equivalent in Computer Science/Engineering/Maths/Physics. Experience in assembler programming would be an advantage.

There are also some opportunities for

Fortran Programmers

— preferably with a science degree or equivalent. Some knowledge of Data General systems would be useful but not essential.

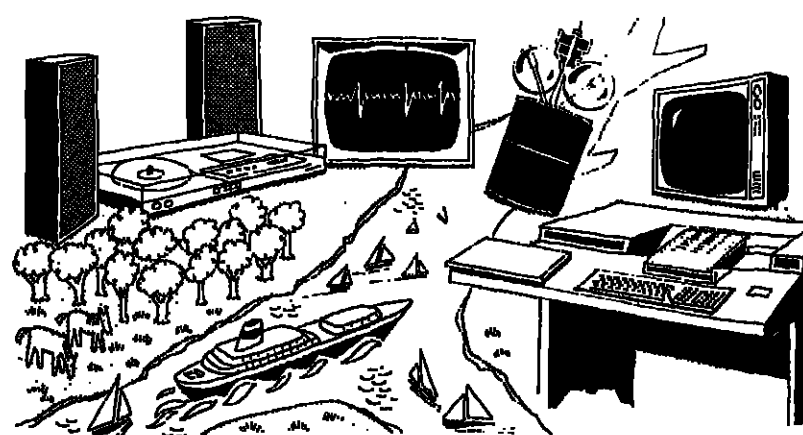
Competitive salaries will be negotiated on the basis of experience and qualifications. Large company benefits include generous help with relocation expenses.

We're around three miles from the centre of Nottingham — enjoying all the amenities of a big city and attractive countryside. The area offers a wide range of reasonably priced housing — plus first class road/rail links to London and the North.

Join us now...

Contact Roger Andrews, Software Engineering Manager, on Nottingham (0602) 866522 Ext 201 between 10am — 8pm. Please reverse charges. Alternatively, write to him at Digital Technology Centre, Plessey Communications & Data Systems Limited, Abbeyfield Road, Lenton, Nottingham NG7 2SZ.

 **PLESSEY**



Scientific Computing in Computer Aided Design

Micro-electronics

Mullard Southampton is a leader in the dynamic world of the silicon chip: we design, develop and manufacture MOS integrated circuits.

One of our key areas is the **Computer Aided Design** activity which provides a support to our electrical development engineers.

We now offer you the opportunity to join us at the forefront of the micro-electronics world — we need someone (male or female) with programming knowledge and experience in a scientific application, preferably Fortran or Algol, to join our CAD team. The work is varied — ranging from creating systems to programming on a dedicated computer — a 128K word SEL 32/66 computer with Tektronix graphics.

You will probably have a degree in a relevant scientific subject with an appreciation of electronics and be able to demonstrate to us a practical aptitude in using computers.

Salary will depend on the experience you can offer us and there are excellent fringe benefits, including generous relocation expenses where necessary.

Our Southampton plant is situated on the edge of the New Forest and is close to the Solent with its attractive water sports facilities.

Please write with details of your qualifications, experience and current salary to: John Wells, Personnel Officer, Mullard Southampton, Millbrook Industrial Estate, Southampton SO9 7BH. Or telephone Southampton (0703) 775533.

**Mullard
Southampton**

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Online Opportunities

Software support

We require more people to join our software support team. If you have sound ICL online experience then this is an ideal opportunity to develop your career with Telecomputing, a growth company and leaders in software for ICL online systems.

London Programmers

Honeywell Cobol - Experience of accounts applications.

Analyst

Experience of retail accounting systems an advantage.

Sales support

2 years programming and/or micro support experience assembler or Pascal.

Analyst

With 2 years 1900/2900 experience.

Programmers

Cobol or RPG2 experience.

Programmers

2900/2903 Cobol. Online experience a distinct advantage.

Manchester

Programmers

18 months Cobol 1900/2900 online exp.

Birmingham

Programmer

ICL 1900 Experience of TPS, maxmap or George II.

Lancashire

Analyst programmer

With 2903/04 online experience.

Bracknell

Programmers

With minimum 18 months ICL Cobol - generous relocation package.

Northamptonshire

Cambridgeshire

Programmers

With at least 18 months Cobol 1900/2900 experience.

Analysts

Minimum 3 years computer based system development.

Maldenhead

Programmers

IBM Series 1 assembler or Cobol

Telecomputing Programming vacancies

Our client services teams continue to expand to meet the growing demand for our software product and project services. Hence the need for more Programmers.

Manchester & Oxford

Senior Programmers

TOP CLASS Cobol Programmers to work on a wide range of projects. Experience of online systems would be a distinct advantage. Excellent salary package.

Programmers

With at least 12 months ICL Cobol experience to join project teams working on clients applications. Good starting salary and excellent career prospects.

Manchester Sales Executive

High basic + commission + car.

Top class Sales Exec. based in Manchester to sell TPS — the leading software product for ICL communications systems, Terminals and project services. Computer and sales experience essential.

Australia Still more people required to work in Sydney & Melbourne. Programmers

\$A 14,000-20,000

We are looking for experienced Cobol Programmers with a minimum of 2 years experience. Online and/or TPS experience a distinct advantage.

Analysts **\$A 14,000-20,000**

Applicants with online experience preferably including TPS who have written system specs. for major applications.

If any of these vacancies interest you, phone Chris Swinbank on Oxford (0865) 723621
Telecomputing People, Seacourt Tower, West Way, Oxford OX2 0ED

Telecomputing People is part of Telecomputing, the company that developed TPS and launched it worldwide. Telecomputing provide advisory, training and implementation services for installing online computer systems around the world. So Telecomputing People have the right contacts and the right credentials. When you get in touch with Telecomputing People you are in contact with people who have their finger on the pulse of the industry.

**Telecomputing
People**
here to help



JBA

Sales Manager

South London

c. £10,000 base salary plus car

A well established terminal manufacturer with an impressive growth record wishes to appoint a Sales Manager to take responsibility for the Southern Region. Candidates must have a successful background both in sales management and in selling terminals, modems or similar equipment. The function currently reports to the M.D. and therefore the opportunity exists to influence the direction of the marketing effort. The base salary is negotiable but total earnings are expected to be well over £15,000 plus large company benefits. Contact: Jim Baker

PDP Programmers

London/Home Counties

£6,500-£9,000 + Expenses

This client is a city-based software house which is continuing to attract development projects from a prestigious and growing client base. On joining their team of Consultants, Analyst Programmers with a good knowledge of RSTS/E and BASIC + (and possibly MACRO-11) will have the opportunity to significantly contribute to the growth and expansion of this still small and versatile organisation. Self-motivation and the capacity for hard work and commitment will be extremely well rewarded both financially and in terms of increased responsibility and status. Basic salaries range from £5,000 to £8,000 - according to experience, with bonuses and profit sharing providing around £1,500 p.a. extra. Each Consultant has the chance to earn a stake in the company. Contact: Andy Wright

Consultant Analysts and Programmers

Surrey/Hants

to £8,000

A progressive and expanding consultancy organisation is seeking to appoint additional competent business analysts and programmers to work on development of technical and commercial systems incorporating software and scientific aspects. Candidates must have spent at least three years in the industry and be able to design and carry out analysis of real-time applications on minicomputers. This is an excellent opportunity for the ambitious technician to work with professionals in a sophisticated environment. Contact: Margaret Stevens

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01-491 4478

Programmers

West End

up to £7,100 + benefits

A leading overseas banking group require programmers with a minimum of 2 years COBOL experience, ideally gained on IBM/370. The installation handles financial applications including an on-line foreign exchange system. Upgrading of the machine within the next year will enable the successful candidates to engage in creative development work. The bank offers traditional fringe benefits including a very low mortgage scheme after a settling-in period which, together with low interest loans, represents a valuable package. Very pleasant working environment and flexible approach to those who can use initiative and accept responsibility. Contact: Mike Creamer

Electronics Technician

North West Surrey

c. £5,000

Our client, a well known manufacturer, is expanding its headquarters service facility and therefore has a vacancy for a Technician to diagnose and repair equipment and printed circuit boards. Applicants should have an HNC in electric/electronic engineering (or similar) and at least one year's practical experience in a workshop or repair environment. This is a tremendous opportunity for a young person to progress in the computer industry with an excellent salary and benefits. Contact: Jim Baker

AUSTRALIA

Computer professionals with more than 3 years' experience who are determined to emigrate to Australia will benefit from our consultancy service. Initially, we advise and provide an assessment of your career prospects in Australia and, later, when your arrival there is imminent, you receive the concentrated services of our Associate company in setting up introductions to suitable vacancy positions in Australia. Since JBA commenced this service we have been extremely successful arranging a selection of possibilities for people arriving there (mainly in Sydney and Melbourne) and the people concerned thereby found ideal employment very quickly. Contact: Mike Creamer

DATA PROCESSING MANAGER

c. £6,000 + CAR

To work with the current system, an on-line real-time Commercial Accounting and Stock Control programme on a Burroughs B741 and B721 with 14 VDU screens. You should be well educated with practical COBOL knowledge. You will have a team of people to assist you with the varied and complex work and will be involved in the future development of both hardware and software, as well as defining operational procedures.

For further details and an application form ring Sheila on 01-800 1245 or write to British Distributing Company, 590 Green Lanes, London, N8 0RA

This position is open to both male and female applicants.

bdc
THE ELECTRICAL WHOLESALE

THE OPERATIONS SPOT SENIOR OPERATIONS ANALYST 370 OS/VS1

London or Home Counties

★ Salary £5500-£6000
★ Relocation Package
★ Days Only

Are you interested in supporting the Operations Department of a large organisation?

Do you have the ability to lead a team of operations analysts to maintain an IBM 370/158 running OS/VS1?

Do you have a good appreciation of operations problems and the ability to expedite them?

Have you a technical knowledge of OS/VS1 and a good operations background? Is your current position an operations analyst or perhaps shift leader/supervisor?

Are you currently looking for a more rewarding position?

THEN CONTACT NEIL ARMSTRONG NOW ON 01-803 7335.

IDS

Information Processing People

58 Porters Road, London W8. Telephone 01-603 7335. Telex 261298 Computer Services & Recruitment Consultants.

Analyst/Programmer

The Engineering Industry Training Board has the responsibility under the Industrial Training Act for training in the engineering and allied industries. Its Research Division is responsible for identifying the research and information needs of the Board and for commissioning or carrying out the necessary studies.

A graduate in Mathematics, Computer Science or Statistics with experience in FORTRAN and/or COBOL programming is required to join a small team providing computing services to the Research Division based in Watford. The post carries responsibilities for data analysis and for designing and writing data management and analysis software on an ICL 1900 series computer linked to VDUs through 7502 processors. A knowledge of BASIC and ON-LINE programming is desirable, but not essential as necessary training will be given.

The appointment will be either as a Senior Research Officer (Salary: £4576-£5985) or as a Research Officer (Salary: £3576-£4576) depending on qualifications and experience.

- £200 p.a. London allowance
- Lunchtime Vouchers: £2.50 per week
- Annual leave: 20 days
- 35-hour week

Write or telephone for an application form to Miss K. Money, Personnel Officer, Engineering Industry Training Board, 41 Clarendon Road, Watford, Herts. Tel: Watford 44322, Ext. 70.

EITB
ENGINEERING INDUSTRY TRAINING BOARD

PROGRAMMER/ANALYST

Salary up to £5,073

Borough Treasurer's Department. The Council possesses an ICL 2803 Computer which is already processing many financial systems. It has recently been decided to develop its use into other areas with a consequential increase in the staff of programmer/analysts.

One of these posts is still available and applications are invited from persons who should ideally have some practical experience of COBOL programming, familiarity with ICL software and some systems analysis experience. Applications will, however, also be considered from persons with other practical computer experience, who have the potential to be trained for the position by attending suitable courses which will be provided.

Temporary housing is available and furniture removal costs are paid in appropriate cases. Closing date 12th February, 1979.

Application forms are obtainable from and returnable to the Assistant Executive Officer, Town Hall, Preston PR1 2RL (Tel: Preston 84881 Ext. 371).

ON-LINE DEVELOPMENT NORTH WEST SALARY £NEG. + CAR**THE COMPANY:**

A large group of Ford main dealerships with a turnover of £50M +. Comprehensive and successful Accounting and Parts stock control systems are run on an ICL 2904 based at Old Trafford, Manchester. An advanced on-line system for the Parts departments will go live in April.

THE JOB:

To contribute to all aspects of the design and development of further on-line systems for Service and Sales departments.

THE CANDIDATE:

Must have a proven implementation record using ICL hardware and software. Knowledge of TPS, whilst not essential, would be a distinct advantage. Please reply, in writing, giving details of qualifications, experience and present salary to:-

Mr. J. Henda, Group Computer Services Manager
H. & J. Quick Group Ltd.
680 Chester Road, Old Trafford, Manchester

Sales Manager Microcomputer Systems Basingstoke c £8,000 + profit share

If you have proven success in sales, a good knowledge of computer technology, and the business acumen necessary to manage sales growth successfully, this challenging appointment is for you.

As Sales Manager for this well-known and highly regarded distributor you will spearhead UK sales of the world's most advanced microcomputer systems and products - the Zilog range.

Reporting to the Directors your responsibilities will include motivation of the sales force, key accounts development, marketing and pricing policy, and recommending stocking levels.

The total remuneration package could exceed £10,000 p.a. and a company car is provided.

Telephone Kevin Smellbone
Reading (0734) 595888
PER, Sun Alliance House
60 Oxford Road, READING RG1 7LU



Applications are welcome from both men and women

FOCUS ON MILTON KEYNES

For the best choice of rural or urban living, old or new housing to rent or buy, with excellent social, sports and shopping facilities...

Add to this the exciting job opportunities in the major expansion plans of a 'blue-chip' Bureau/Consultancy organisation... then consider your qualifications!

Operations Staff (normal 3 shift working)

- 8 Operators (1 yr. UNIVAC/IBM exp.) up to £3950
- 6 (Assist. Ops. (6 mths exp.) up to £3500
- (Trainee Ops. (age 18+ with A Level Maths) up to £2900
- 1 Exp. Comms Devel. Op. (PDP RSX 11M System) up to £8500

Specialist Programmers

- 2 Exp. Systems Progs. (for OS 1100 Support) up to £7250
- 1 Exp. Mechanical Eng. Applications £5000-£7000
- 2 Eng. App. Progs. (grad. Chem/Mech Eng.) £3500-£5000

Cobol Programmers (2+ yrs exp.)

- 2 required (1 to be based in Bristol) up to £8000

Service Engineers (car allowances paid)

- 1 Exp. Field Service DEC/PDP machines up to £6000
- 1 Comms Eng. (PO/Datol) up to £5800
- 1 Remote Batch Term. Eng. up to £4500

BENEFITS for all the above positions include luncheon vouchers, 35 hr. week, 4 weeks' holiday, BUPA Contribution, mortgage assistance and negotiable relocation expenses...

SO ACT NOW ring Bryan Richmond 0603 867233 in confidence or leave Ansafone message at any time.

EAST ANGLIAN SYSTEMS LIMITED, PO Box 70, Norwich NR1 4EF.

A personal approach for the better computer jobs!

COMPUTER PERSONNEL APPOINTMENTS LTD.
Career Specialists and Consultants for
D.P. MANAGERS, SYSTEMS ANALYSTS, PROGRAMMERS AND OPERATORS
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For application forms apply to:
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or Tel: 01-328 7251

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The consultant is not responsible for the content of any advertisement. The telephone numbers are
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Analyst/Programmer
A number of our clients, computer manufacturers, are looking for personnel to work on pre and post-sales support in the mini market. A minimum of 2 years programming and analysis on minis is therefore essential. Experience of technical surveys, presentations and software implementation at installation level would be an asset. Salaries range from £6-7K + car or car allowance. Ref: 161/CW/Fran Setter.

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Professional & Executive Recruitment



THE ARENS GROUP

375 City Road, London EC1V 1NA England
International Search, Recruitment and Advertising Consultants

OPPORTUNITIES AT SENIOR LEVEL FOR SYSTEMS DEVELOPMENT AND PROGRAMMING PERSONNEL

Scotland
IBM 370/138 Installation
This highly successful Company, the UK arm of a major international Group, is currently reorganising its total UK computing function. Commitment to an exciting systems development plan has created the need for a highly skilled, innovative and enthusiastic team of professionals. The jobs are demanding and the rewards high; the challenge of starting from the ground floor, being consistently in the front line and obtaining recognition through hard work and the application of technical skill is an opportunity not to be missed by those with real ambition. The plan is to install a central mainframe, an IBM 370/138, in Scotland with terminal links to other major operating Divisions. The immediate need is for Senior Divisional and Central key personnel, other skilled staff being recruited at a later date. Systems development and programming will be decentralised to the point where these functions become Divisional responsibilities, while computer processing for all operating Divisions will be centralised in Scotland.

SENIOR DIVISIONAL ANALYSTS c.£8,000

The two Senior Divisional Analysts appointed will report directly to Divisional management and be totally responsible for systems development in their respective Divisions. Several years' experience in systems development and programming is essential, as is a full working knowledge of IBM application software as it applies to major company operations. Reference 41421/C.

SENIOR FINANCIAL SYSTEMS ANALYST c.£8,000

Reporting directly to the Corporate Systems Director, the successful candidate for this important post will be located in London for a period of about 15 months, developing to effective implementation a Corporate Receivables System. Simultaneously, he or she will be preparing for the transfer of all outside run financial and accounting applications to the new in-house installation. A full working knowledge of related IBM application software, coupled with broad experience in financial and accounting systems development is a necessity; a working knowledge of distributed processing techniques together with terminal operations and an in-depth working knowledge of Cobol would be a distinct advantage. Reference 41422/C.

DATABASE/SOFTWARE ANALYST PROGRAMMER

Responsibility for all technical programming, database set-up and maintenance, the acquisition and use of proprietary software and all telecommunications operations including the installation of all planned terminals is the basic outline of this important position. Reporting to the Corporate Systems Director, the person appointed should possess in-depth knowledge of the following: IBM operating and applications software as they apply to working under DOS/VS; database set-up, use and maintenance; Cobol programming. Reference 41423/C.

ANALYST PROGRAMMER

Sheffield c.£6,000
An interesting position has arisen in this highly successful engineering Company, which is part of a large international Organisation. The requirement is for an experienced Analyst Programmer, someone capable of taking responsibility for the development and implementation of computer systems for the Company's operations in Sheffield. The man or woman appointed will have a full working knowledge of Cobol and the ability to work with the minimum of supervision. He or she will control all aspects of computer processing on an IBM System 34. This is a position with much scope for personal advancement and career progression, within a stable, growing environment. Remuneration reflects the Company's attitude to the post and in addition there is an attractive benefits package of the standard normally associated with a major employer. Reference 41424/C.

Applications for these appointments, which are open to both men and women, should be made either by writing or telephoning for an application form quoting the appropriate reference number to

The Arens Group,
375 City Road, London EC1V 1NA, England,
telephone 01-278 9476.

SYSTEMS DESIGNER/ PROGRAMMER

A systems designer/programmer (not entry level) is required for the operation of a bacterial identification service. Bacteria from clinical sources are identified by probabilistic analysis of test results by reference to computer-stored data bases. Systems use Optical Mark Reader forms. Data Recognition (Bacterial) Machine. Entry punch tape terminal connected to the LUCS time sharing system. Current software in FORTRAN IV. There is considerable scope for improving the responsiveness of the system and the efficient storage and retrieval of data, and to revise the methodology or explore alternative methods. Sympathetic supervision would be given for specialised training, if required. Grading dependent upon basic qualifications in appropriate subjects and on experience.

Salary scales: Scientific Probationary scale £2,891-£4,276 + London weighting (£354). Post Probationary scale £3,798-£4,899 + London weighting or Senior Scientific scale, if applicable. £5,451-£6,837 + London weighting. NHS designated scale 9 £4,869-£5,926 + London weighting.

Ring 01-208 7041 for a more detailed job description (Dr. L. Hill, on East 47) and for an application form (Personal Officer, on East 12) - Central Public Health Laboratory, Colindale Avenue, Colindale, London, N.W.9. Closing date: 15th February, 1979.

Derby Lonsdale College of Higher Education

College Computer Unit PROGRAMMER

to assist with development of packages and the system. Main languages in use are COBOL, FORTRAN, BASIC and ASSEMBLER.

Salary Scale: £3933-£4320 plus £312 supplement.

Application forms and further particulars may be obtained from the Staffing Officer, Derby Lonsdale College of Higher Education, Keston Road, Derby DE3 1GB, to whom completed forms should be returned by Monday, 19th February, 1979.

THE LONDON HOSPITAL MEDICAL COLLEGE (University of London)

COMPUTER PROGRAMMER

Applications are invited for the post of Programmer in the Computer Section from Programmers with at least one year's experience. The Computer Section provides an advisory and programming service to the staff and students of the Medical College. A PDP 11/10 is used both as a local computer and as a terminal to the University Computers. Experience of using FORTRAN is essential. Knowledge of BASIC, RND and PDP-11 assembler would be an advantage. Salary will be at a point on either Programmer 18 Scale (£3,384-£5,604 + £450 London Allowance per annum) or Programmer 1A Scale (£3,893-£6,556 + £450 London Allowance per annum), according to qualifications and experience. Enquiries to Mr S Evans Tel. 01-377 2668.

Applications to The Secretary, The London Hospital Medical College, Turner Street, London E1 2AD, giving the names of two referees.

Oxford and Cambridge Schools Examinations Board

COMPUTER OFFICER

The Board has transferred some of its examination administration to the IBM 370 computer of another Board, using Assembler and Cobol, and plans further transfer. An experienced officer is required to work in Cambridge on the development of new programs and control of those in use.

Stipend £5120-£7030 (Cambridge University, Computer Officer Grade 2).

Further information, forms and applications to: The Secretary, Oxford and Cambridge Schools Examinations Board, 10 Trenchard Street, Cambridge CB1 1AH February, 1979.

Davy Computing Limited
the petrochemical computer bureau specialists
require

1+1 SALES EXECUTIVES+

for their Trading Division

1 SOFTWARE SALES EXECUTIVE+

The successful candidate for this challenging position will be responsible for all aspects of selling the Company's widely used COMPAID system to the petrochemical, energy and piping industries throughout the world. Considerable overseas travel, therefore, will be almost certainly involved.

1 HARDWARE SALES EXECUTIVE+

In this second important position, the successful applicant will be required to travel extensively throughout the UK expanding the sales of the AD/380 interactive graphics system, the demand for which is growing rapidly.

Both these jobs will appeal to people prepared to accept a challenging and exciting way of life. But don't let a lack of knowledge of computers deter you from applying. What we are seeking first and foremost, in each case, is a proven record of selling success plus a solid background of technological experience. We will provide the requisite knowledge of computers during an initial training period. The preferred age range is 26 to 35.

Davy Computing Limited is part of the Davy Corporation - one of Europe's largest groups providing a total engineering and contracting service in the field of heavy capital plant. Both positions advertised command generous remuneration in the form of a good salary plus commission plus company car plus relocation expenses where appropriate plus other normal big-company benefits.

Applications in writing should be addressed to Mrs. E. Bishop, Personnel Officer.



DAVY COMPUTING LIMITED
Moorfoot House, Clarence Lane,
Sheffield S3 7UZ.
Telephone: (0742) 71201.
A Davy Corporation company.



CAD

Computer Aided Design with one of the big names

Applicon United Kingdom is the fast growing subsidiary of one of the world leaders in the production of computer aided design, draughting and manufacturing systems. From our Boston, U.S.A. headquarters, we are responsible for some of the most sophisticated CAD systems in the world. Systems which are in huge demand by all kinds of industry throughout the UK. Our growth in 1979 will be phenomenal which means we urgently need to strengthen our sales and technical support teams.

SALES PROFESSIONALS
Two experienced salesmen or women to cover territories in the South and North. Working from home and reporting to the Sales Manager, you will find almost every company on your territory is a potential CAD user! Ideally you will already have CAD sales experience but extra training can be given to any top flight sales professional with a good "track record" in the computer systems business. Salary plus commission should produce around £12000 p.a. for an "on target" performance and considerably more if you exceed even our expectations. Car provided.

Anyone joining Applicon in 1979 is assured of a great future so why not contact us now. Telephone or write to Peter Cook, Sales Manager, Applicon United Kingdom, Brook House, 21 Church Street, Wilmslow, Cheshire SK9 1AX. Tel. 0625 532613.

APPLICON
UNITED KINGDOM

OPERATORS

ICL 2900 £4700
Operators required for company moving to Bucks, 1/2 years GIL or 2800 experience. Freedom to shift/leader in 3 months.
ICL 2900/1900 £4400
Opportunities in West London exist for Operators with 12/18 months' experience. GIL an advantage. Good perks.

ICL 1900 £4300
Operators with 2 years' GIL/III experience required for sites in Essex and City. 2 shifts only.

DEC PDP 11/40 £4500
Operator required. 2 years' + experience for a site in South London. 2 shifts.

UNIVAC £4800
Operators/SNR Operators required for various sites in London. Possibility of travel abroad.

IBM OS £5500c
Chief Operator for company in Essex. Supervisory experience + good technical knowledge required for this post.

IBM OS £5800
4 years' experience required, plus 1 year as a shift leader for a site in Central London as a shift supervisor.

IBM OS £4500c
Operators with 6 months' experience are required by companies in Essex, Middle and Central London.

IBM DOS up to £5000
Operators with 2 years' experience required by two sites in West London. 2 shifts only.

IBM DOS £4500
Minimum of 6 months' experience required by this company in Central London. Good prospects for programming.

DATA CONTROLLERS. All areas £3000-£5000

TARGA COMPUTER DIVISION

3 LIVERPOOL STREET
LONDON EC2M 7NH 01-283 2751

2960 Computer Operator

£4,160 Southampton

The Company, which is part of the international Pirelli Organisation, has recently installed a 2.25 megabyte ICL 2960 Computer with 'ME/B' and we are looking for an experienced Operator to join the computer department at the Head Office in Southampton.

Applicants, male or female, should have at least one year's experience on large 2900 machines, preferably using local batch, MAC and TP.

A competitive salary of £4,160 is offered including shift pay for a rotating 3 shift system and company benefits include a superannuation scheme and assistance towards the cost of relocation in appropriate cases, to this pleasant part of Hampshire.

Please telephone for an application form or write with brief details to:

Mr. C. L. Baldem, Staff Officer, Pirelli General Cable Works Ltd, PO Box 4, Western Esplanade, Southampton. Tel: Southampton 20381 ext. 160.



NORTH WEST UP TO £6,000

SENIOR PROGRAMMERS FOR REAL TIME DEVELOPMENT

We are a young company with an international reputation in the supply of factory machine monitoring systems based on Data General computers. We are part of a medium sized group with interests in graphics, peripherals and PC board manufacturing.

Due to expansion we have now positions for programmers with Assembler level language experience. The positions involve occasional travel to sites and opportunities exist to travel abroad, including the USA, where a subsidiary is to be established in 1979.

The new factory is situated on the edge of the Industrial area and within easy reach of attractive rural areas.

Applications to be made in writing, giving details of education and experience to:

MR. T. QUERRY, TDS DEXTRALOG LIMITED
WHITEBIRK INDUSTRIAL ESTATE
BLACKBURN, LANC. BB1 5BN

Project Leader	Kingston	4 yrs. systems exp.	To £7500
Senior Analyst	Farnham	Sales support	To £7000
Senior Analyst	Slough	Production systems	car + £7000
Chief Prog.	Widow	RPA	£6150
Systems Analyst	Slough	New systems	C. £6500
Analyst/Prog.	Wembley	4 yrs. exp.	To £6500
Systems Analyst	Wembley	+ ins. benef.	

Please phone for an application form and details of other vacancies local to you.

AMES PERSONNEL

Employment Agency Suite M, Dryden Chambers,
119, Oxford Street, London, W1R 1PA Tel: 01-434 1106

TYNE AND WEAR COUNTY COUNCIL COUNTY TREASURER'S DEPARTMENTS COMPUTER SHIFT LEADER

(Salary up to £4880)

Applications are invited from experienced Computer Operations Personnel for this vacancy in the County Data Processing Section.

The County Council operates an ICL 1904S computer with 192K core store, 11 ED560, magnetic tapes and drums which supports a communications network of over 50 terminals used for on-line processing, data capture and MOP development.

Working hours are based on a 5-day, 2 shift system, 7.30 a.m. to 3 p.m. and 3 p.m. to 10.30 p.m. Monday to Friday. Written applications, stating age, qualifications, current salary and experience to date, and naming two referees, should be sent not later than February 15, 1979, to County Treasurer, Tyne and Wear County Council, Sandford House, Archbold Terrace, Newcastle upon Tyne NE2 1ED.

Ferranti success creating career opportunities

PROCESS CONTROL SOFTWARE DEVELOPMENT

South Manchester

Since 1962 the Wythenshawe Division of Ferranti Computer Systems Limited has been a leader in the field of process management and control. During this period of time, the company has developed a set of software packages which provide building blocks for complex and powerful process control and management systems. This Process Management Software (PMS) therefore enables easier, faster and more secure development of applications with easier enhancement thereafter. The success of PMS has created a need for further development, to cope with the increasing complexity of these systems. Thus several additional staff are now required, as detailed below.

The work involved varies with seniority but encompasses the following functions:
* Detailed design of system modules from broad specifications.
* Programming and testing modules using Coral 66.
* Assembling and testing individual systems, to the requirements of end user clients and in house project teams.
* Providing 'pre sales' support to Ferranti sales teams.
* Providing 'after sales' support to clients and Ferranti project teams.
For experienced staff, these opportunities offer the chance to do some rewarding creative work; less experienced staff can learn a considerable amount about process control systems.

The offices are located on the Southern boundary of Manchester, in pleasant and rural surroundings. Assistance with relocation is available where necessary, and the usual large company benefits apply. Please apply to Sampson Staff in the first instance, either by telephone (transfer charges if necessary), or letter. Initial interviews will be held in Manchester or London.

Sampson Staff

15 Piccadilly, Manchester M1 1LT. Tel: 061-832 4184.
Evenings and Weekends - Tottington (020488) 2545.

WORD PROCESSOR OPERATOR or GOOD COPY TYPIST SEEKING A CHANGE

We are a thriving, friendly employment agency seeking a Word Processor Operator - but will train a good Copy Typist - to operate our RANK 850, plus other varied duties. Age immaterial but must have a good standard of education and enjoy working as part of a team. Salary £3,800 plus, according to experience.

Ring: Marlene Austin, 01-439 6301
Allegro Emp. Agency
21 Kingsley Street, London W.1

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

Successful Peripheral Salesmen- Are you where you want to be?

Probably not if you are employed by a sizeable organisation. For although you have sold effectively for 3-5 years, you are still one of many, who are going nowhere.

We are recruiting for a Company, who in Europe are leading peripheral suppliers. After three years operating in the U.K., they are on target. The future depends on people like you, which means you can control your own destiny.

The Company's base is in Surrey and you will predominantly sell in the south, with a basic income of £6,000-£7,000 (£12,000 when you hit target), a 2 litre car, 4 weeks holiday and a good pension and life assurance scheme.

To arrange an immediate interview, telephone CLIVE HARRIS on 01-402 9332 (During the day) on CRAYFORD 51464 (7p.m.-9p.m.), quoting REF: CRF 25.



Computer Resources Recruitment
Association

KNIGHT PROGRAMMING SUPPORT LIMITED

INTERVIEWERS

£10,000+ per annum

If you have experience in the computer services industry and can demonstrate success at sales and in dealing with people you should answer this advertisement.

KPSL is one of the fastest growing companies in DP and believes in rewarding good people well. Earnings in excess of £10,000 p.a. are obtainable.

Give David Shepherd a ring on 01-734 0152 and discuss the opportunities which are available in our London and Birmingham Office.

ROYALTY HOUSE, 72 DEAN STREET, LONDON W.1
01-734 0152/6 (24 hours)



CUSTOMER ENGINEERS & SENIOR CUSTOMER ENGINEERS

£5,000 to £8,000 + Car

Versatec, part of the Xerox Group, is a Californian based company supplying high technology electrostatic computer peripherals for scientific and commercial applications. Continued success requires further expansion of our Engineering Department, we are, therefore, looking for engineers to complement our existing team.

Initially, training will be in the UK but applicants should be prepared to travel in Europe and to our manufacturing facility if required. The jobs, which involve both the installation and maintenance of modern electrostatic graphic sub-systems in the South West and South East, are both challenging and rewarding. Applicants (male or female) should be self-motivated, and capable of working from home or a local office with the minimum of supervision.

Salaries are above average. Company cars are provided, and an incentive scheme and BUPA membership are amongst the benefits offered. Assistance with relocation will be provided if necessary.

Contact David Goddard for more details.

VERSATEC
A XEROX COMPANY

Versatec, 27/35 London Road, Newbury, Berkshire.
Telephone: Newbury (0635) 42421.

M.I.S. MANAGER

£9,000
negotiable

Our client is one of the most successful and rapidly expanding manufacturers of jeans in the United Kingdom.

At their Head Office in South Essex they are currently installing a large IBM System 34 with purpose written on-line applications for sales order processing, manufacturing, accounting and stock control.

The company wish to appoint a Management Information Systems Manager who will be responsible to the Financial Director for the implementation of the proposed system and the further development of Management Information activities. This is a challenging opportunity in a very successful company not only to create a data processing department but also to take a wider role in the company's future affairs.

Applicants, in the age range 30-35, should be graduates or have an equivalent professional qualification. Experience with IBM System 3 or 34 is desirable but of equal importance is proven management ability in medium sized installations, enthusiasm and initiative. Some knowledge of business practices in a consumer durables industry would be an advantage, as would experience in the design of integrated systems.

Salary will be negotiable around £9,000 per year together with the usual range of other benefits.

For an application form men and women are invited to write or telephone in confidence to Geoffrey Laycock, quoting reference 596/CW at the address below (telephone 01-229 6742).

Urwick Dynamics Limited

Computer and Selection Consultants

9 Monmouth Road
London W2 4UT

Systems Management

- For an established group producing an extensive range of electronic components, employing 2000 people in the UK and eager to maintain its enviable growth record.
- With responsibility for controlling the development and implementation of online computerised facilities in three major companies in the UK — to be linked in due course to a network.
- Requiring an individual, ideally 28-35, who combines good, allround online systems experience — ideally in a manufacturing environment, with business acumen and a profit-orientated approach.

Remuneration will be up to £8,500 plus car. Removal expenses to Crawley, West Sussex will be provided in appropriate circumstances.

Please write in confidence, quoting Ref. T897/CW giving concise personal, career and salary details to R. G. Billen.



Arthur Young Management Services
Rolls House, 7 Rolls Buildings
Fetter Lane, London EC4A 3NL

Science Research Council
Royal Greenwich Observatory

SCIENTIFIC OFFICER / PROGRAMMER

Applications are invited for a Scientific Officer post in the Computing Department of the Royal Greenwich Observatory, which is situated on countryside at Herstmonceux, close to the South Coast. The Department is responsible for the central computer services to support astronomical research, the design and construction of observing facilities, and the provision of astronomical data for use. The appointee will join a small group of programme staff engaged in the development of new software for general use and applications in astronomy, engineering and information processing. At present, the computers used include an ICL 1903T system with multiple-access and batch facilities, an interactive minicomputer with interactive graphics, and a DEC 2060 terminal link to the dual 81380/195 system at the Rutherford Laboratory of the Science Research Council. Fortran is the most widely used language. The local computer is due for replacement, so the appointee will be able to share in the planning and development of new facilities. There are opportunities to collaborate with astronomers and engineers in other departments on a wide variety of projects.

Applicants should have recently obtained or be about to obtain a degree, or similar qualification and have a good general knowledge of computer science. A basic knowledge of physical science and/or numerical analysis would be an advantage. Experience is not essential since in-service training will be provided.

The salary scales, career prospects, and employment conditions are aligned with those of the Scientific Civil Service. The starting salary will depend on qualifications and experience and will be in the range £2,658 - £2,700; the scale carries annual increments to £4,415, but good performance is likely to be rewarded by earlier promotion to Higher Scientific Officer (£4,101-£4,415). (Note: Current salary scales are subject to review in June 1979). There is a non-contributory pension scheme. The Observatory has good facilities for sports and social activities. Application forms and further information can be obtained from Mr. N. Jones, Royal Greenwich Observatory, Herstmonceux Castle, Hailsham, East Sussex BN27 1RP, telephone Herstmonceux 3171, and should be returned not later than 28th February 1979.



GMS COMPUTING LIMITED
SHEFFIELD

SYSTEMS PROGRAMMER

Salary negotiable

GMS, a leading IBM Bureau, is a rapidly growing manufacturing company.

JOHNSON & FIRTH BROWN GROUP

The Group consists of a number of specialist engineering companies with a total turnover of £228 million per annum, employing 15,000 workforces.

Equipment installed includes an IBM 370/138, 3540/44, 3540/44, 3705 under PEP/PCP. GMS has a distributed network including 2800/4, INFOBOX 7000 and various IBM PJE systems.

The vacancy exists within the Technical Support Department as a Systems Programmer with at least two years' experience and good ability in at least two of the following: —

VSI
SMP
SYSGEN
ASSEMBLER

VSPC
VTAM/PCP
RTAM
VTAM

If you are interested, please ring John Lawton on Sheffield 074 750191 or write with details to GMS Computing Limited, 100, House, Monk Street, Sheffield, S1 2BU.

MYRIAD OPERATIONS

Computer Personnel Consultants

COMPUTER OPERATOR

W2

£3300

The data processing department of an international advertising organisation can currently offer an ideal opportunity for a young person with experience of COMPUTER OPERATIONS who is keen to progress their career within a small but active team.

The person appointed will be responsible for ensuring that all production work is completed to agreed schedules and for the resolution of any run error situations which occur during processing. He/she will in addition, prepare work for processing and maintain program/tape libraries.

The ideal candidate will be able to offer six months' experience gained in an IBM DOS/VS installation. However, applicants from alternative backgrounds will also be given active consideration. The person appointed will be self-motivated and keen to act on their own initiative, reacting positively in a fast turnaround environment, where he/she can look forward to a rewarding future.
Ref: SW1/102.

24-hour answering service
Please telephone for a confidential
discussion or write:
301 Fleet Street London EC4A 3AA
01-353 0981

UGENTLY NEEDED . . .

BUSINESS SYSTEMS SALES EXECUTIVES

We are recruiting for a rapidly expanding U.S. based manufacturer of REAL TIME MINI COMPUTER SYSTEMS. Their products have gained a reputation of being reliable, cost effective and versatile with first time users in the Insurance, Distributive and Manufacturing Industries.

The Company is in the process of taking on larger premises in London and is planning on setting up Regional Centres in the North and Midlands.

Our client requires commercially biased Business Systems Sales Executives to operate primarily in the South of England. The successful candidates will be developing new business and can expect to earn £14,000+ by achieving a very realistic quota. (The commission percentages are steeply escalating for over performance!)

Above average terms, including a 100% Club Scheme. Company car and a generous attitude towards guarantees.

Potential candidates should contact NOW.

Dennis Hall on 01-439 9674

or Goudhurst 773 (evenings and weekends)



recruitment services

SYSTEMS PROGRAMMER FOR UNIVAC 1100 SYSTEM

Leicestershire

up to £6237

British Gas requires a Systems Programmer to join a small team providing software support for a UNIVAC 1100.

The computer is used in connection with control of the Natural Gas Transmission System and also provides a bureau service to British Gas Headquarters, primarily for engineering and planning applications.

The post, based in Hinckley, Leicestershire, involves the maintenance and development of the UNIVAC 1100 Operating System and other standard UNIVAC and in-house software, and support to the Operations Section and to computer users. Applicants should ideally have two years' experience as a Systems Programmer using a low-level language, preferably on UNIVAC 1100 systems, though experienced applications programmers or systems programmers on other computer ranges wishing to widen their experience would also be considered.

Salary within the range £4833-£6237 plus current self-financing productivity payment.

Housing costs in the East Midlands are among the lowest in the country. Hinckley is within easy reach both of pleasant countryside and, by convenient motorway access, the large city amenities of Leicester, Coventry and Birmingham.

A contribution towards relocation expenses may be given in appropriate cases.

Write giving full details of age, experience, qualifications and current salary, quoting reference PS/618801(705)CW, to the Senior Personnel Officer (Hinckley), British Gas, 69 Brynston Street, London W1A 2AZ. Closing date for applications 15th February, 1979.

BRITISH GAS

Contract Spot

REAL TIME
PROGRAMMERS
(Cobol or similar)

North London and Essex

Phone Paul on 01-440 4424
**Meteor Computer
Consultants Ltd.**



London Borough of Havering

Housing Department

Accounts Assistant

(Temporary position)

Salary up to £4,917 p.a.

For work in connection with a Digital PDP 11-40 mini computer in the Council's Housing Department.

The successful applicant will be closely involved with the development of programs related to various Housing functions and a sound knowledge of Basic 4 would, therefore, be an advantage.

Starting salary will be dependent on age, qualifications and experience.

Application forms from the Housing Manager, Mercury House, Mercury Gardens, Romford, Essex, RM1 3DT. Tel. Romford 88895, Ext. 425. Closing date: February 28, 1979.

COMPUTER PERSONNEL APPOINTMENTS

PROGRAMMER/ANALYST
TROUBLE SHOOTING
ASSIGNMENTS circa £5,500
+ Car

A young person experienced in Cobol and Main Computers, in travel from Midlands base to sites in the North and East.

Duties include specification and installation of new systems, programming and support to accounting staff.

THE PERSONNEL GROUP
15 NEW STREET
021-643-0951

THE UNIVERSITY OF LEEDS DEPARTMENT OF COMPUTER STUDIES

Applications are invited from suitably qualified persons for two new posts of LECTURER with special interests in DATA PROCESSING and MICRO-TECHNOLOGY in the above Department. The Department provides a Student Computing Service to support any department within a large DEC System 10.

Salary on the scale for lecturers £12,854-£17,154 (under review) according to age, qualifications and experience.

Application forms and further details are available from the Registrar, The University, Leeds LS2 9JT, quoting reference number LS2 12. Closing date for application February 14, 1979.

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Programmer

Bedfordshire/Hertfordshire
up to £7000

Sechlog (U.K.) Engineering Limited in Hemel Hempstead are a rapidly expanding company in the field of weatherstripping and energy economy. This year the company will be installing the latest Hewlett Packard 3001 Series 33 computer system with VDU terminals to aid further sales growth.

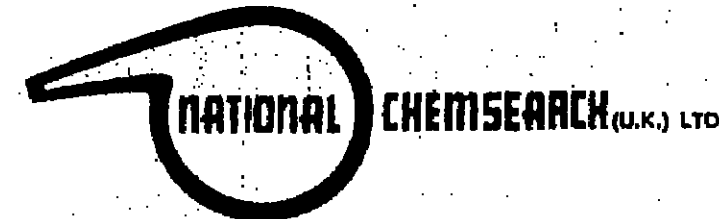
The company requires an individual able to take responsibility for the future of data processing in a dynamic environment and be capable of growing with the company. The work involves liaison with the U.S. parent on common systems development and will initially be concerned in order processing and stock recording with a variety of applications in the field.

Experience — 3 years minimum with proven ability to design systems and write programs on time and without supervision. Experience with Cobol, on-line VDU terminals and database will be an advantage.

• Relocation expenses will be paid where necessary.

Candidates, male or female, should write stating how they meet this specification to, Terry Halloran, Executive Selection, Division, 8th floor, 29 East Parade, Leeds LS1 5PX, quoting MCS/1702.

Price
Waterhouse
Associates



PROJECT LEADER APPLICATIONS PROGRAMMER

Due to company growth, our European Data Processing facility, located in the West Midlands, now requires well-qualified professionals to fill these vacancies. Throughout Europe we utilise Datapoint 5500 and 8600 machines in addition to an IBM mainframe.

A certain amount of European travel will be necessary, particularly for the Project Leader position. An applicant with financial applications experience would be particularly suitable for this vacancy.

If you are interested in one of the above positions, please telephone me, Barrie Webster, reversing charges, on 021-557 8811, otherwise mail your C.V. to my attention at National Chemsearch (UK) Ltd., Ryders Green Road, West Bromwich, West Midlands B70 0AJ.

Shift Leader

c. £4,100 p.a. Blackpool

A recent promotion within the Computer Department, has led to a vacancy for a Shift Leader at Telefusion, the leading T.V. rental and electrical retailing Group.

Our installation comprises an I.C.L. 1900 (soon to be upgraded to 2800) running under George 3, T.I. minicomputers and an extensive telecommunications network.

Based at the Company's Head Office in Blackpool, and reporting to the Operations Manager, the person appointed should have at least two years experience with the George 3 operating system, and currently be working as a shift leader or senior operator. The salary is made up of a good basic plus shift allowance and there are the usual large Company benefits and promotional opportunities.

Male or female applicants should write, giving brief details of age and experience to:

Mr. J.M. Rollason
Assistant Personnel Manager
Telefusion Limited
Telefusion House
Preston New Road
Blackpool

TELEFUSION

SOFTWARE SUPPORT ANALYST/PROGRAMMER

CalComp is acknowledged as the world's leader in computer graphics — one of the most rapidly developing areas of the computer industry.

We already offer the widest range of graphics products available from any one manufacturer and, with our constant product development programme, we now urgently need an additional, experienced Software Support Analyst/Programmer.

THE JOB

Based in our modern offices in Bracknell but covering the whole of the UK, the job involves advising CalComp graphic systems users on the wide range of software available and assisting with the on-site installation of software. It also involves taking an active part in the marketing of our software and, particularly, in the organisation of benchmarks, etc.

THE PERSON

The person we are looking for will be aged around 24-34 with at least 2-3 years experience of FORTRAN and an Assembler language. He (or she) should have a broad knowledge of the computer industry and be used to working in a competitive commercial environment. An understanding of CAD and/or computer graphics will be a distinct advantage.

THE REWARDS

The rewards will be attractive for the right person, with a good basic salary, bonus, a full range of fringe benefits including BUPA and a company car.

To apply, please write to, or ring:

Don Crowle, CalComp Limited, Cory House, The Ring, Bracknell, Berkshire. Tel: (0344) 50211

CALCOMP

THE OPEN UNIVERSITY
DATA PROCESSING DIVISION

STATISTICAL PROGRAMMER

Starting salary up to £5,500

The Statistician in the University's Data Processing Division is to be strengthened by the appointment of an additional programmer to undertake support which will include the analysis and direct user contact. The team is responsible for the development of statistical systems providing statistical analysis of administrative data as well as providing the computer expertise required in special statistical and survey work undertaken by the Institute of Educational Technology. Programs are written in COBOL, some use is made of FORTRAN and FORTRAN is used for the more sophisticated statistical work together with statistical/survey analysis software such as the SPSS and OSIRIS packages.

The person who is seeking will ideally have two or more years COBOL and/or FORTRAN experience but a less experienced applicant with suitable potential would be acceptable. He/she will be required to apply their existing computing skills to the ongoing work of the team while extending their range of expertise. Exposure to statistical methodology is not essential but would be considered an advantage.

Application forms and further particulars are available by postcard request please, from The Recruitment Office (JD3745/1), The Open University, P.O. Box 75, White Hall, Milton Keynes, MK7 8AL, or telephone Milton Keynes 63404; there is a 24 hour answering service 63888.

Closing date for applications: 15th February, 1978.

SYSTEMS PROGRAMMER

circa £8000 p.a.

We are looking for someone with a good background in DOS/VS, and who has worked with operating systems for at least two years. Preferably a person with knowledge of Assembler, CICS, GRASP and/or POWER. Some experience of database systems would be useful.

This is an interesting opportunity to join X-Calibur's own Systems Programming service. You should be prepared to travel to our client locations around London (or beyond at times). Mileage allowances will be paid and any other travel costs reimbursed. You must possess the necessary ability to enable you to work on your own and make a useful contribution towards the efficient running of clients' operating systems.

Applications will be treated in the strictest confidence. Please apply to Jim Tyrne, X-Calibur, 46 Essex Street, London WC2R 3JF. 01-353 8201/3

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CONTRACT SERVICES

REDDITCH DISTRICT COUNCIL TREASURER'S DEPARTMENT

PROGRAMMER

Salary on scale rising to £4,320 p.a. plus £312 Annual Supplement

The District Council operate a 131K Univac 90/308 with 10 million bytes of disc capacity, running under OS/3. A programmer is required prior to 6-12 months experience of RPO2. However, applications will be seriously considered from persons with experience of accountancy and/or batch processing who wish to train as programmers.

Removal expenses, housing accommodation and/or car allowance in approved cases. A flexible system of operation, based upon a normal week of 37 hours, with generous annual leave.

For further information telephone Bruce Long on 04200 64200, Ext. 348.

Applications giving details of age, qualifications, experience, together with the names of two referees, to be submitted to the Chief Executive Officer, P.O. Box 10, The Council House, Redditch, Worcestershire B97 7JF, by 19th February, 1978.

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MYRIAD

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MIDDLESEX

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Our client is currently developing several systems involving T.P. and Audio Response software to run on a network of DEC minicomputers in association with an IBM 370/138 running under DOS/VS.

The successful applicant will lead a small team of systems and software programmers and will be responsible for the efficient use of hardware.

Currently several major systems are running on the IBM 370/138 and while the new on-line real-time applications are being developed these systems require on-going enhancement and review.

The development of new systems is well underway and will require the technical support to gain an in-depth understanding of DEC real-time communications software.

This is an excellent opportunity for a Senior Technical Specialist to move into a management role, whilst at the same time maintaining a high degree of involvement in software and systems. Ideally applicants will have a degree level education supported by a minimum of five years' systems and software experience involving either IBM or DEC hardware. Supervisory or Project Management responsibility would be of interest although a strong technical background, particularly involving DOS/VS, is of prime importance.

The company have recently agreed a development program together with a complete restructuring within the Management Services division. This has resulted in the creation of a Technical Support Management role and the setting up of a support team. The new Manager will be expected to establish the department and assess training and support requirements as well as leading the software design team on the development of several real-time applications.

The Company have their Data Centre at Brentford and offer an attractive salary package together with excellent conditions of employment. These include flexible working, a 3% contributory pension scheme, subsidised canteen and an active sports and social club. Assistance with relocation expenses will be paid where necessary.
Ref. E1/102

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North London

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Meteor Computer
Consultants Ltd.

Plessey Computer Centre

TP Software Programmers

Addlestone, Surrey c. £5,500

We are looking for software programmers to support and develop transaction processing software which will be run on both central and remote computers. The Centre utilises a hardware configuration of 1906S, 1906A and 2960 DME running under George 3 and our own specialised online TP system. A large number of applications are supported and developments are in hand to introduce 2903/4 systems as attached remote computers. Planning is also in hand for the introduction of VME/B.

Successful candidates will be an important part of a small, flexible and dedicated team providing software support to the whole of the Plessey Group. There is ample opportunity for developing technical skills, but we expect a minimum of 2 years experience with PLAN, a high level language and George 3. Development and exploitation of the transaction processing system is the most significant part of the work undertaken and candidates should have some relevant experience in this area, or a demonstrable aptitude to learn quickly.

We offer a pleasant working environment and many company benefits including a pension and life assurance scheme, generous holiday and sickness entitlement, a subsidised staff restaurant and an active sports and social club. Non-contributory BUPA membership is also provided. Relocation expenses will be paid where appropriate.

Please write with brief details or telephone Peter Steiner, Recruitment Manager, Plessey Radar Limited, Addlestone, Weybridge, Surrey. Tel: (0932) 47282.

PLESSEY
electronic systems

Anglian Water Authority PROGRAMME ANALYST

Post No. R3R30

Grade 4 (£3867-£4164 plus £312 p.a. supplement)

Applications are invited for the above post in the Resource Planning Section of the Division's Engineers Department at Boston. The successful applicant will be responsible to the Principal Engineer (Hydrology) for writing computer programmes in connection with hydrological studies, resource planning, land drainage design and groundwater analogue models. A knowledge of statistics is essential. Applicants should have a degree in computer sciences or equivalent with relevant experience and should be able to liaise with other staff of different disciplines.

The Division is responsible for all aspects of river management over an area of 620,000 hectares between the Humber and the Wash involving land drainage, flood alleviation, sea defences and water resources planning, development and control. Boston is a market town with lower than average housing costs and is situated within easy reach of the east coast and the large cities of the east Midlands. A wide range of social, recreational and cultural amenities is available locally.

N.J.C. for Water Service Staffs conditions of service apply and relocation expenses are payable in appropriate cases. Application forms, which are returnable by 18th February, 1978, are available from the Divisional Manager:

George Ogden
Divisional Manager
LINCOLNSHIRE RIVER DIVISION
50 Wide Bargate, Boston, Lincs. PE21 6SA

ICL 2970 SOFTWARE TEAM

A 3M byte ICL 2970 is installed at the Authority's new computer centre in Central Bradford. It serves a large and growing communications network, providing services to Head Office and throughout divisions of the Authority via remote batch, batch, MAC, and TIF facilities.

The software team, which is responsible for the development and maintenance of the system software especially including the VME/B operating system, is being expanded and applications are invited from men and women for the following new posts in the already established team.

SENIOR SYSTEMS PROGRAMMER — Ref. RN573

For this post, which ranks second in the software team to the Chief Systems Programmer, considerable practical experience of system software including a major operating system (VME/B would be an advantage) is required.

PROGRAMMER — Ref. RN572

At least two years' programming experience is required and although systems software experience would be an advantage consideration will be given to applications from persons wishing to move into the systems programming field. Relocation expenses and disturbance allowance are payable in approved cases. Appropriate 2800 training will be provided.

Application forms are available from the Regional Personnel Department, Yorkshire Water Authority, West Riding House, Albion Street, Leeds (Tel Leeds 448201 Ext. 289), to whom they should be returned by 12th February, 1978 quoting the appropriate reference number.

Yorkshire
Water

Sales Executives Computer Peripherals and Data Logging Systems

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Are you a young ambitious salesman with a good proven sales record plus a background in data processing and electronics? Then this could be your next step up.

Cristie Electronics Ltd., an established young expanding company, have recently launched two new microcomputer based products—an intelligent cassette terminal and a portable datalogger. Two self-motivated salesmen are needed to sell these products throughout the UK. Promotion prospects are wide open to Director level!

If you know you have the dynamism and background to meet the challenge.

Telephone: John Scott Gloucester (0452) 35525
PER Grosvenor House
Station Road, Gloucester GL1 1TA
Applications from both men and women are welcome.

SOUTH GLAMORGAN HEALTH AUTHORITY (T)

SENIOR ASSISTANT

COMPUTER UNIT

Salary: £4,421-£5,326 per annum

(New entrants to the N.H.S. start at minimum of the scale)
Applications are invited for the post of Analyst/Programmer within the Management Services Department of the Authority. Applicants should possess a sound knowledge of commercial systems, as well as a fluent knowledge of Fortran. Experience with PDP11 systems would be an advantage.

Informal enquiries to Dr. M. Brown — Tel: 0222 20661.

Application forms and job description from: Area Personnel Department, 14th Floor, Pearl Assurance House, Greyfriars Road, Cardiff. Tel: 0222 394734.
Closing Date: 12th February, 1978.

BETTERWARE

Roiford, Essex

DATA PROCESSING OFFICE MANAGER

The Job:
• organise and manage office procedures
• control and motivate office staff
• liaise with suppliers of equipment and services
• assist in development of new electronic systems
• to assist in programming office computers in BASIC/COBOL

The Rewards:
• Salary negotiable depending on experience. Excellent fringe benefits.
• Candidates, men or women aged 30 years or over, should have experience of office management in a production and/or sales environment together with practical knowledge of O.M. and/or data processing. The job offers an opportunity to be in at the start of computer based data processing in a progressive Company. Good prospects for multiple person to progress within the organisation.
• Please for Application Form. Roiford 42232

University of Bradford Computing Laboratory COMPUTER OFFICER

(Ref. CU/00/R/00)

Applications are invited from graduates or professionally qualified persons with programming experience for the post of Computer Officer in the University's Computing Laboratory which operates a large ICL 1904S installation running under the George 3 Operating System and providing a central service for research and teaching within the University. The successful applicant will work in the Applications group, and will have special responsibility for graphics software.

Salary on scale £2,883 to £5,555 p.a. (under review).

Application forms and further particulars are available from the Personnel Officer, University of Bradford, Bradford BD7 1DP.

CLASSIFIED COPY

All classified copy should reach our offices no later than 6.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8018.

The Centre operates a large IBM 360/65 with MFTII and HASP, also a system of linked GEC 4082's. We provide a computing service for research projects within the University. We have vacancies for the following positions.

COMPUTER OPERATOR

Minimum of 1 year's experience of a large IBM system is needed. Starting salary according to age and experience on a scale £3503-£4325 inclusive of shift and London allowance. 3 shifts Mon-Fri. only.

COMPUTER RECEPTIONIST/ASSISTANT

Job involves handling work flow between the Users and the computer, as well as to operate terminals and a graph plotter. Suitable for school leavers of at least 17 years of age. Previous experience not necessary as training will be given. Preference to applicants with 'O' level qualifications or equivalent. Salary according to age and experience, on a scale £2628-£3364 inclusive of shift and London allowance. 2 shifts covering 8.00 a.m.-10.00 p.m., Mon-Fri. only.

Both positions include over 6 weeks' annual holiday.

Please write giving details to:

Yvonne Outen, Operations Supervisor
Computer Centre, University College London
17-19 Gordon Street, London WC1H 0AH
or telephone 01-387 0888

YORKSHIRE REGIONAL HEALTH AUTHORITY HARROGATE

The Yorkshire Regional Health Authority's Computer Centre provides a regional computer service to the seven Area Health Authorities in the region. As a progressive and expanding centre we are seeking to appoint additional competent application systems designers. The centre operates an ICL 1904A computer (128K), 8 180KC tapes, 8 EDS50 discs, card and paper tape input, 2 printers and a 7020 Terminal. All run under George 3 operating system. The work is of a varied nature and there is opportunity to become conversant with many different types of application used in the Health Service.

SYSTEMS DESIGNER

(Scale £4,421-£5,328) Ref 47

Applicants should have a sound educational background together with 18 months or more of practical design experience in commercial data processing, with at least 3 years' computing experience in total. Formal systems training would be an advantage.

JUNIOR SYSTEMS DESIGNER

(Scale £3,452-£4,421) Ref 48

The work involves assisting in the investigation, design and implementation of computer systems. Applicants should preferably have at least 12 months design experience in commercial data processing.

Candidates from outside the NHS would normally start at the minimum of the scale.

Application forms and job descriptions from Regional Personnel Officer, Yorkshire Regional Health Authority, Park Parade, Harrogate. Please quote ref. no. Closing date: 14 February 1978

PROJECT LEADER SOUTH EAST LONDON to £7515

New projects scheduled to commence shortly are on-line systems for Finance (including Rent Accounting) and Property Information Systems. Other areas under investigation include word-processing and computerized telephone exchange.

Come and join a progressive organization based in modern premises at Catford, consisting of some 60 development and operations staff utilizing IBM 370/138 supported by distributed Olivetti, Plessey and Rediffon Processors. We offer good career prospects, a competitive starting salary, optional flexitime, in excess of 5 weeks leave and a thoroughly professional DP environment. Good public transport facilities and free car parking available.

For further details ring our Systems Manager, Mrs. L. Harris, on 01-690 4343 Ext. 68 or send full personal and career details to her at Lewisham Town Hall, Catford SE26 4RU.

LONDON BOROUGH
OF LEWISHAM

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COMPUTERCALL

Anglian Water Authority

ASSISTANT NETWORK CONTROLLER

£5,133-£5,493 (NJC Grade 6)
inclusive of supplements

A vacancy exists for an Assistant Network Controller to work under the Network Controller in implementing and maintaining control of all aspects of an expanding communications network. The project size is currently over 100 VDUs connected via Incolem 20/30 Controllers with Inteltek modems operating at 4800 bps over Post Office private lines, to dual Datamat 355 front ending dual Honeywell 66/10 systems.

Applicants should have at least 1 year's experience on Network Control and 3 years in Computer Operations. Experience of Post Office telecommunications and Honeywell Datamat equipment is desirable but not essential.

The post is located in Huntingdon and has excellent conditions of service with generous relocation expenses where applicable.

Please contact Jenny Spencer on Huntingdon (0480) 66181 Ext. 370 for further information and an application form which should be returned by 9th February, 1978, or write to:

ANGLIAN WATER AUTHORITY
Diploma House, Grammar School Walk
Huntingdon, Cambs.

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HOWARD

MICROCODERS/MICROPROGRAMMERS

BELGIUM. C £25,000 P.A.

A team of three required well into 1980 on AMD 2901 series. Any applicant with microcode experience will be given serious consideration.
Ref: D8080179.

HARDWARE/SOFTWARE TESTING SYSTEMS ANALYST

BELGIUM. C £25,000 P.A.

Nine members of a team required well into 1980 in supervising, developing and assist in software/hardware testing of a major communications project. Software applicants should have real time experience, particularly RSX and Micro. Some experience of drivers would be useful as would testing experience of exposure to microprocessors. Engineers with experience covering both hardware and software particularly considered.
Ref: BJ240170.

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IMS Systems Programmer

to be responsible for setting up IMS at an OS/VS1 installation in Holland, and providing all aspects of system support. You should have at least 18 months experience of IMS (not necessarily under VS1) and will have performed at least one IMSGEN.

£20,000+
PER ANNUM

CICS or IMS Programmer

to work on development projects for clients in Germany. The systems involved will be written in PL1 and Cobol. You should have worked with CICS or IMS for at least 1 year, and will have more than 3 years DP experience in all.

£20,000+
PER ANNUM

For further details contact
Brian Bidston

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2 The Courtyard
Denmark Street
Wokingham, Berks.
RG11 2BB
Tel: (0734) 72122
Telex: 847317

PROGRAMMER

£4,200-£6,200 p.a.
Stockport

The Central Electricity Generating Board invites applications for the above position in its computer department.

The job is in a team which provides a computing service to power stations and involves working on the region's central computer (ICL 1904S to be replaced by a 2960 in 1980), plus locations own machines (Fortran, G.E.C.-D.E.C.). The team is based at Bramhall, Greater Manchester, but assignments elsewhere may take place from time to time, e.g. North Wales or North Lancashire.

Applicants should have 'A' level maths plus two years' appropriate experience, preferably on COBOL and all Fortran knowledge of George 3 and/or VME-13 operating systems and teleprocessing plus real-time experience would be an advantage.

Applications in writing from other sex giving details of age, experience, etc.

To the Personnel Manager
Europe House
Bierd Hall Lane
Cheshire Heath
Stockport
Cheshire SK3 0XA

To reach him no later than 16th February, 1979. Please quote vacancy No. 402-C.W.



SYSTEMS ENGINEERING MANAGER

c.£10,000 pa.
South West England

SPAN

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Your entrepreneurial outlook will include the flair and invention of a marketing orientated person, in addition to the ability to survey customer applications and produce corresponding network systems solutions. Other responsibilities will include the recruitment of staff and the development of these recruits into efficient technical teams.

For your total involvement and commitment, our clients offer a high salary, together with a company car and bonus making the whole package highly attractive.

For more details please contact Douglas Woodward on the number below or on Crayford 527062 after 7.30 p.m. or at Weekends.

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An additional Recruitment Consultant is required in our London office to handle our permanent and contract placements.

This position will be of interest ideally to candidates with some or all of the following

- A broad Data Processing background
- Intermediate computer languages
- No contractual commitment
- Computer sales
- Immigration

You should consider yourself not to be afraid of hard work, confident, self-assured and capable of using initiative, together with a pleasant personality.

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CONTRACT SERVICES

SENIOR SYSTEMS PROGRAMMER

IBM INSTALLATION
SOUTH EAST LONDON
to £7515

As the Senior member in the systems programming section you will be responsible for the implementation of new software, maintenance of the DOS/VS operating systems and other installed software such as CICS (DUOT), JARS, FLEET, SLE, SLIM, SPSS and SELCOPI. Sound experience of DBC, COBOL, FORTRAN and PL/I is essential. The successful candidate will be responsible for the installation, testing and commissioning of the system.

Come and join a progressive organization based in modern premises at Catford, consisting of some 60 development and operations staff utilizing IBM 370/138 supported by distributed Olivetti, Plessey and Rediffon Processors. We offer good career prospects, a competitive starting salary, optional flexitime, in excess of 5 weeks leave and a thoroughly professional DP environment. Good public transport facilities and free car parking available.

For further details ring our Systems Manager, Mrs. L. Harris, on 01-690 4343 Ext. 68 or send full personal and career details to her at Lewisham Town Hall, Catford, SE26 4RU.

LONDON BOROUGH
OF LEWISHAM

BUTTERWORTH COMPUTER SERVICES MANAGER £7000 UP

Butterworth, one of the largest UK book publishing houses specialising in legal, scientific, technical and medical books, wish to appoint a Computer Services Manager at their offices in Kent.

This is a new post heading a small team of analyst programmers and will be principally concerned with the development and maintenance of the new interactive system based on a PDP 11/70. The main applications are for the order processing, distribution and financial systems but extensions into other uses are being considered.

Applicants should have a thorough knowledge of programming and some systems analysis experience. A working knowledge of a PDP 11/70 installation and familiarity with BASIC would be added advantages.

Salary will be based on experience, but will not be less than £7000.00 per annum with 5 weeks' holiday.

Please write, explaining how you think you can fulfill the requirements of the job and enclosing a detailed c.v.

Miss Val Weston, Personnel Manager
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Sound business knowledge is essential as the work not only involves data control and supervising the quality of the business systems being processed on our computers, but also involves detailed liaison with our clients on the use and extension of computer systems within their organisations. All applicants must have practical experience of computer systems and a sound understanding of accounting principles. Benefits include four weeks holiday and luncheon vouchers, non-contributory life assurance and BUPA schemes in addition to a profit sharing bonus.

These posts offer a wide variety of assignments and excellent career development. If you feel that you match up to our demanding yet highly rewarding standards, please write or telephone for an application form, quoting ref: W/S, to: Janet Gothard, CMG (West End) Limited, Sunley House, Bedford Park, Croydon CR0 2AR. Tel: 01-898 9281 (TO BE RELOCATED IN LONDON)

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MARKETING BIT

FORECASTING—1

As simple or as complicated as you care to make it

SALES forecasting within the computer industry varies in its application from being an exact science to "one of those marketing things we ought to try some time".

Sales forecasting can really be as simple or as complicated as you care to make it. There are lots of methods one can utilise. Simple extrapolation, extrapolation plus weighting, trend analysis, regression analysis, correlation analysis with or without tied indicators, and so on.

However, the effective application of most of these techniques is a function of a company's intimate knowledge of the market place in the context of every force which has an influence upon it; and in an industry where market research is in general no more than a gesture, few companies have the resources to be truly sophisticated.

The basic dilemma of forecasting is that the principal factors involved create an opposing force in terms of both the scope and limitations they imply.

These factors, predominantly consist of production and stock capacity, financial latitude, manpower availability, research and development resources and marketing capability.

What, for instance, will be the predominant effect of manpower upon the sales forecast for next year? Does one simply choose a number and assume that the required number of salesmen, engineers, programmers, systems analysts, etc. will be available, or does one give more heed to the constraints of personnel availability and limit one's revenue horizons accordingly?

Who needs a sales forecast anyway? In an industry where annual growth in excess of 30% is commonplace there should be room for everyone to make a good living!

The only trouble with that philosophy is that one's competitors tend not to subscribe to it, and thus long-term survival depends on having sufficient control over all the factors involved.

Starting out into a new sales year without a sales forecast is rather like setting out to sea without a weather forecast. There is a good chance things will work out all right, but, circumstances can change before you know it, and hazards which might have been anticipated can bring about fatal results.

One of the classic jokes of forecasting is the "wedge", that estimation of future achievement which sits like a piece of Cheddar cheese on the sales plan providing the facility for super performance in the first quarter and establishing disaster for the last, immediately following the departure of the sales manager to a new job.

It is no good at all for the salesman, or indeed his

manager, to make a plan which takes its base from last quarter's performance then grows at some predetermined and consistent rate. It may appear to be a reasonable form of extrapolation but it is more of a guess than a sales forecast.

The other form of forecasting which affects me with a certain amount of hilarity and incredulity, is the Henry Ford-Corporate Tower Syndrome. UK-based sales managers working within American corporations often have to contend with a sales forecasting situation which stems from a corporate edict which goes something like this: "You can generate any sales forecast you like provided it is equal to the share of corporate commitment that we allocated to you in the first place, and provided it is in that currency, either dollars or sterling, which depreciates rather than appreciates against the other so that your commitment can only increase."

There can be no argument that to operate a company without a comprehensive plan for business achievement is virtually suicidal. By and large, the forecasting of costs within such a plan tends to be more predictable than that of sales, particularly in a service bureau or software house environment, although the availability of personnel can be a particularly volatile factor.

The sales forecast, although its generation lies principally within the sales domain, must be based on what is likely in accordance with the company's ability both to influence external forces and to control internal forces, ie what it can provide, as opposed to what it can sell.

Next week I would like to discuss some of the basic methods of forecasting which might be utilised by both the salesman and sales manager alike.

TRADER

On the move

SPECIALIST consultants and recruiting company SMR Sales and Marketing Recruiters Ltd has moved its London office to larger premises to cope with expansion. The new address is 89 Regent Street, London W1. Tel: 01-734 9776. SMR director Alan Williams, under the nom de plume Trader, is the author of Computer Week's widely-read column on sales and marketing techniques.

Puzzle Answer

WE know that $2(x+y)$ equals $xy/9$, which means that x must be $18y/(y-18)$. This cuts down the possibilities considerably, and a limited amount of trial and error produces the unique pair dimensions 180ft by 20ft.

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Ascii through the Logic Gate

An epic in 32K words, by Richard Forsyth

Block 26 (En Bloc)

Hex has been challenged by the DPM to play against the special-purpose chess machine Checkmate (Chess Heuristic Evaluation Computer Knowing Midgame And The Endgame) with his life at stake. He has declined to take part without a second. As a result the DPM has ordered him back to the cells.

ON the way down to the dungeons Hex thought about chess. In his youth he had been a keen player, but he had hardly seen a chessboard for over a decade. Still, he reckoned he could give any machine a good run for its money.

Even so, he didn't regret passing up the contest. It was sure to have been rigged. The gate clanged open and he was hurried in. He could see nothing in the darkness. Then he heard the jingle of McNull's electronic tinkles.

"Art thou right?"

"That is a blessing."

"Listen. Are you any good at chess?"

"Surely the hour for gaming is not at hand."

"It is. The reason I was taken up to the DPM's exalted presence was to play a game of chess."

"Passing strange — the ways of the System," McNull intoned, "and its doings are beyond understanding of mortal man." The shuck of captivity had reactivated his brain impediment.

"They promised me freedom if I won; but I refused to play."

Before McNull could comment, their gate was once again flung open. The bright light assailed their eyes. "This way," barked one of the warders.

This time they were both herded up to the DPM's office. Inside, Hex saw, the Checkmate automaton was still in the centre of the floor.

"I have relented..." began the DPM.

"A miracle!" blurted out McNull. "Mine own ears have heard it. Abraham called Synapse is risen from the grave."

"Shut him up," commanded the DPM, "or you will be sent straight back where you came from."

"Shh," said Hex to McNull.

"In my infinite wisdom," continued the voice of the System, "I have acceded to your demand for a second.

unreasonable though it was. I have decided to interpret the rules leniently, in the interests of the game as a whole. As for an unbiased umpire, the question does not arise, since I am of course perfectly impartial."

"Oh yes," snorted Hex.

"My decisions will be final and binding. There can be no appeal. Now, let the game commence."

"Not so fast," said Hex. "First of all, you cannot act as second to Checkmate if you are referee, so he needs another helper; secondly, this room is too big and bare. The match must be adjourned to a more suitable venue. Besides, I cannot play without a comfortable chair."

"You will play here; you will play now; and you will play standing. Otherwise the game is off."

Some tone in that synthesized speech told Hex that this was no bluff.

"I wish to register a protest," he stammered weakly. "This match is not being conducted according to FIDE championship regulations."

The DPM ignored him. "You have first move."

"How do I make a move?" Hex asked.

"Vocal input — just tell it your choice and the display will be updated to reflect the revised board positions. Once you have spoken, a move cannot be rescinded. You must make 16 moves per hour."

Hex thought for a moment, then coughed to clear his throat. Clearly and distinctly he enunciated "Pawn to King's pawn four."

"Input acknowledged," came the reply, sounding surprisingly thin considering how well they had recreated Dr McNull's voice. The white pawn flashed, then reappeared on its new square.

Hex awaited the machine's response. It seemed to take an inordinately long time. He wondered if the same timing restriction applied to it as to him. Presumably that would be enforced at the DPM's discretion.

After all the preliminary skirmishes, the game itself turned out to be something of an anticlimax.

White (The Hexadecimal Kid)

Black (Checkmate) Resigns

1. P-KP4

Resigns

Resigns

Resigns

Resigns

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Hex and McNull leapt up and down, whooping with joy and disbelief. The tension released itself in an impromptu jig around the chess trolley. One down, half to go, all he needed now was a draw.

The DPM could scarcely conceal his frustration. "As you can see," he remarked sourly, "it has made a very deep analysis of the game."

Hex was cock-a-hoop. "It looked too far ahead," he declared. "So much for theory!"

"Don't be overconfident," warned the DPM. "This machine has the most powerful collection of tree-pruning routines known. You have not won the series yet."

"Come on then," said Hex, "let's get stuck in."

The next game was more conventional. It all proceeded much according to the book for the first 12 moves. The machine opened with P-KP4, indicating that it took its previous evaluation seriously, and Hex put up a variant of the Sicilian defence. In the early middle-game he tried to build up a Queen's side counter-attack; but unfortunately left his King exposed. Suddenly he was a piece down, and his attack lay in ruins.

Gradually his position collapsed. An unforced blunder led to the loss of a Rook. The machine started to force exchanges he couldn't refuse. Soon he was defending desperately. Eventually it boiled down to a black Knight and one pawn against two white Rooks, a Bishop and two pawns. He was up against it.

Then the machine did something curious, it moved its Bishop into an unguarded position. Hex looked for a hidden trap.

McNull was the first to give a reason. "It knows how to win with King and two Rooks against King and Knight. The extra Bishop is an impediment in its eyes."

Hex tested this hypothesis by making a noncommittal move. Sure enough, the machine replied by offering the Bishop up for sacrifice again.

It was as good as over. All he had to do was he low and let Checkmate fruitlessly offer up his Bishop. A draw by repetition of moves became inevitable.

Final score: Hex 1½, Checkmate ½.

Is this his moment of triumph? Don't be too sure.

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